



FX Chassis

Models:

KDL-40S4100

KDL-46S4100

KDL-52S4100

Triage and Troubleshooting Guide

Course: CTV-49

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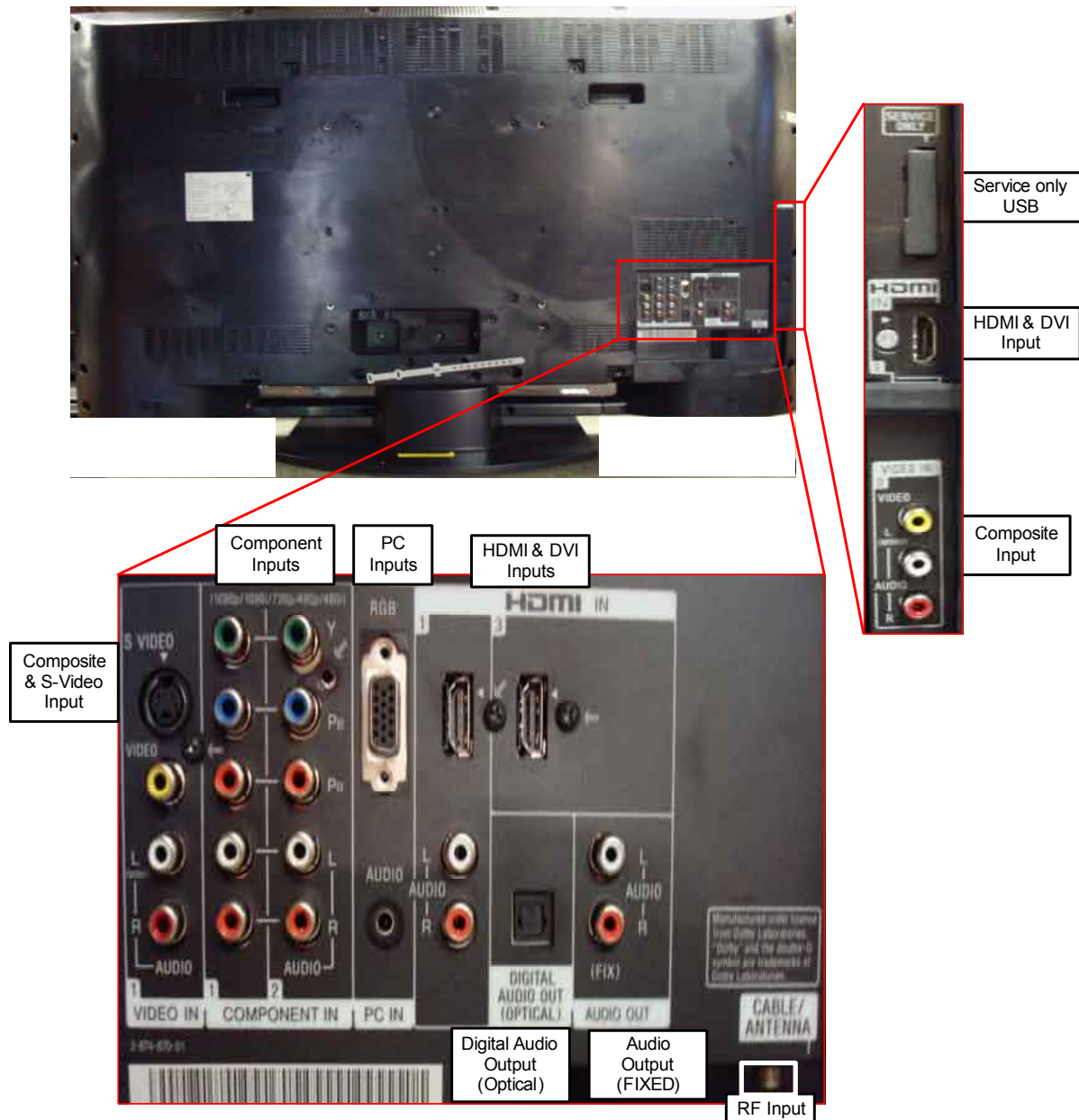
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Section 1 - Input & Output Layout and Description



Input Descriptions

RF Input

Reference Figure 1-1

Composite Video & Audio Inputs 1 & 2

Yellow Jack - Composite Video Input

Red & White Jacks - Right & Left Audio Input

Component Video & Audio Inputs 1 & 2

Red, Green, & Blue Jacks - Component Video Inputs

Red & White Jacks - Right & Left Audio Input

HDMI/DVI Video Inputs 1, 2, & 3 and DVI Audio

Both the HDMI and DVI formats contain digital video. In the case of the HDMI format the audio is also digital and is part of the video and audio data stream over the single HDMI connection. In contrast, the DVI format contains only digital video in its data stream. The audio is sent over a separate red and white wired analog audio connection. Furthermore, a DVI to HDMI adapter is required to connect the DVI connector to the HDMI connector.

PC Video & Audio Input

The MA2 chassis models (KDI-26M4000, KDL-32M4000, KDL-37M4000, and KDL-40M4000) have a Personal Computer Input (**PC-IN**), which connects directly to the PC 15 pin DIN connector (HD15 connector). Once connected the TV functions as a video monitor and audio output (separate Stereo Mini Plug) for the PC. There is a complete table of PC Input Signal Compatibility on Page 18 in the Owners Manual.

"Service Only" USB Connection

This USB connection is for Sony factory use only.

CTV-47

Audio Outputs

Analog Fixed Audio Output

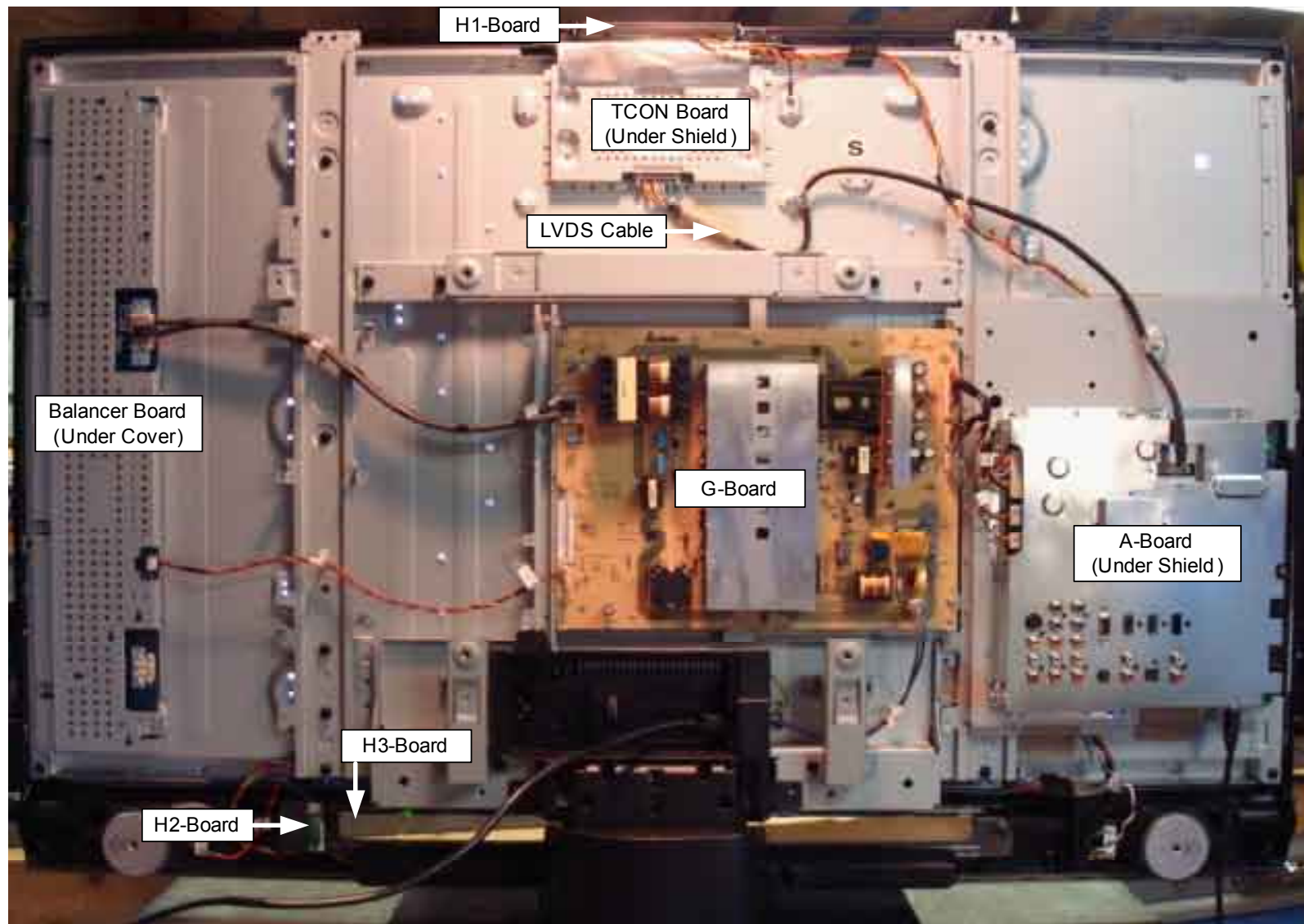
This audio output can be used to listen to the TV audio through an external stereo system. The audio level at the output is set to a fixed level and cannot be adjusted.

Digital Audio Output (Optical)

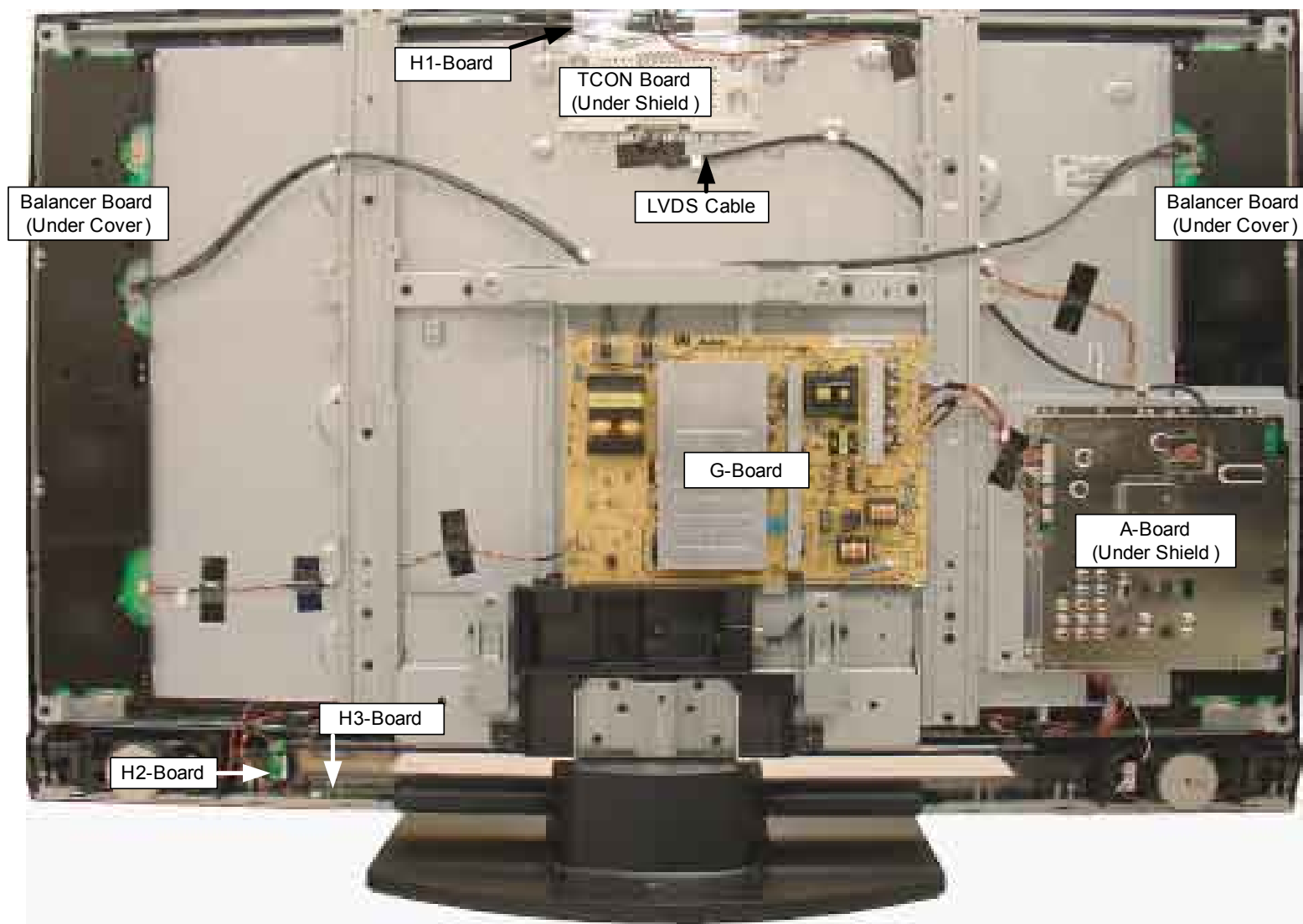
Connects to the optical audio input of any digital audio equipment that is PCM/Dolby digital compatible. The following table shows the audio inputs and the audio format which are present at the Optical Audio Output.

Audio Input Source	Coaxial Output
Digital Tuner 5.1 (ATSC)	2CH PCM
DVD HDMI 5.1	2CH PCM
All Analog Audio Inputs	2CH PCM
Analog Tuner (NTSC)	2CH PCM
SACD (HDMI)	No Output
DVD Audio (HDMI)	No Output

Section 2 - Chassis Layout



KDL-40, 46S4100 PCB LAYOUT DIAGRAM
FIGURE 1-1



KDL-52S4100 PCB LAYOUT DIAGRAM
FIGURE 1-2

PCB and Component Descriptions

Reference Figures 1-1 & 1-2

A-Board

The circuits located on the A-Board perform all Video and Audio processing functions. It also contains all the microprocessor control circuits. The following circuits are included on this board.

- ATSC/NTSC Tuner
- TV Microprocessor
- HiDPRO IC
 - A/V Processing
 - Tuner RF Processing
 - HDMI Processing
 - Scan Converter
- Composite Input Terminals
- Component Input Terminals
- HDMI Input Terminals
- PC-IN Input Terminal
- RF/Cable Input Terminal

G-Board

Except for some regulator circuits on the A-Board, the G-Board is the power supply system board, which includes the following components and circuits.

- Standby Power Supply
 - 3.3V
- Main Power Supply
 - 15V
 - 12V
 - 6.5V
 - 3.3V
- Backlight Inverter Circuit
 - 1.1KV
- Power Factor Control (PFC)
- AC Relay
- Main Fuse (F1)

H1-Board

- Channel Up/Down Button
- Volume Up/Down Button
- TV/Video Button
- Menu Button
- Power Button

H2-Board

- IR Sensor

H3-Board

- Power LED
- Timer LED
- Standby LED

Balancer Board (Part of LCD Panel)

The Balancer Board takes the high voltage (1.1KV) from the backlight inverter circuit on the G-Board and evenly spreads, and applies it to each lamp for an even overall display brightness. Except for some lamp current detection circuits the Balancer Board contains mostly passive components. Lamp drive and current detection is mostly performed by small transformers. There are two Balancer boards in the KDL-52S4100.

LCD Panel Assembly

The LCD Panel Assembly includes the LCD Panel, TCON, and Backlight Lamps.

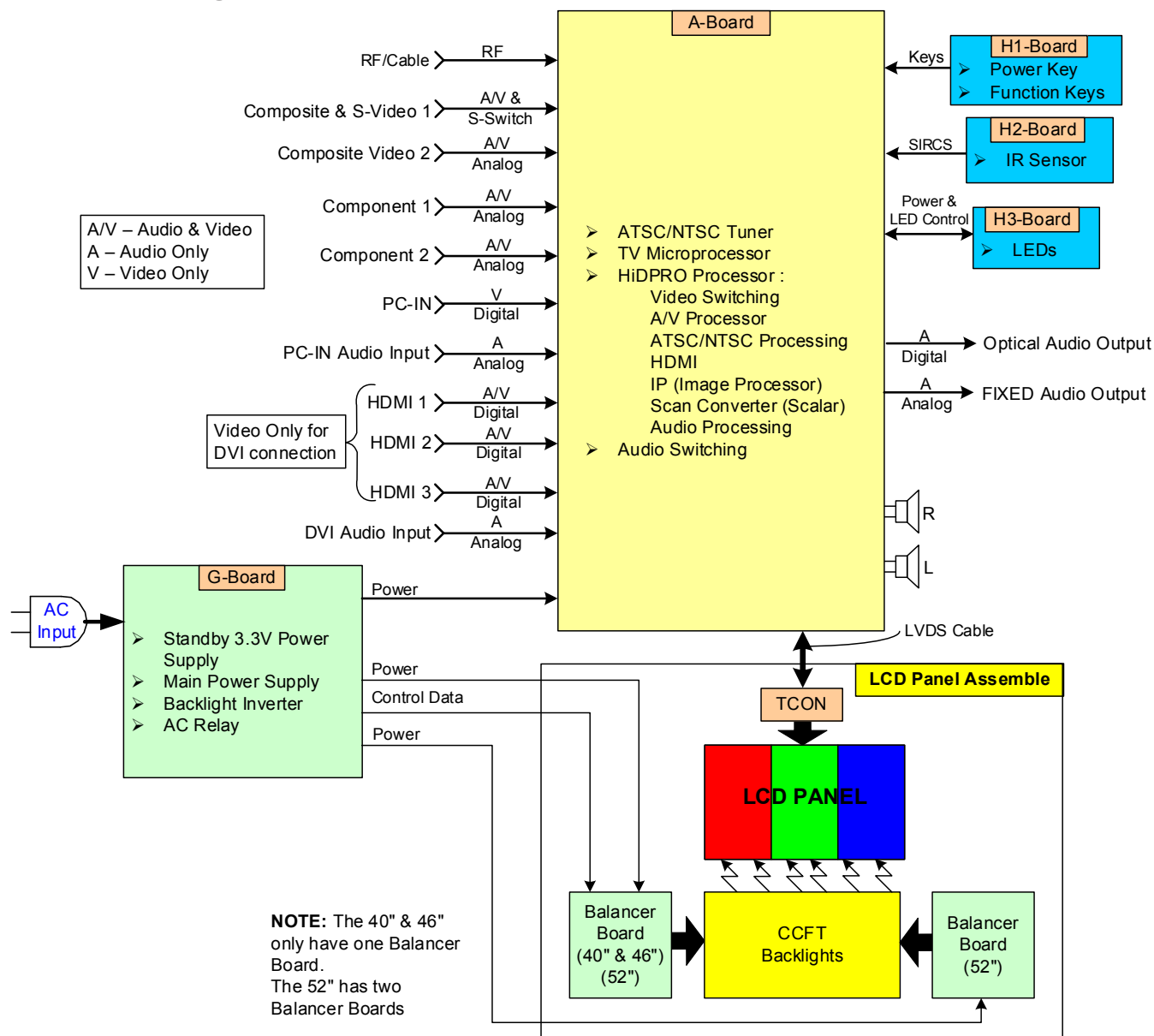
The LCD Panel contains the actual liquid crystals, color filters, and polarizers. The liquid crystals are manipulated by the applied voltage to pass a specific amount of light - from the backlight- depending on the level of voltage applied. The panel resolution on all the FX chassis models is **1920 X 1080 lines**. These are considered 1080P High-Definition models.

The TCON performs all the control, timing, charge, and discharge functions driving the operation of the LCD Panel.

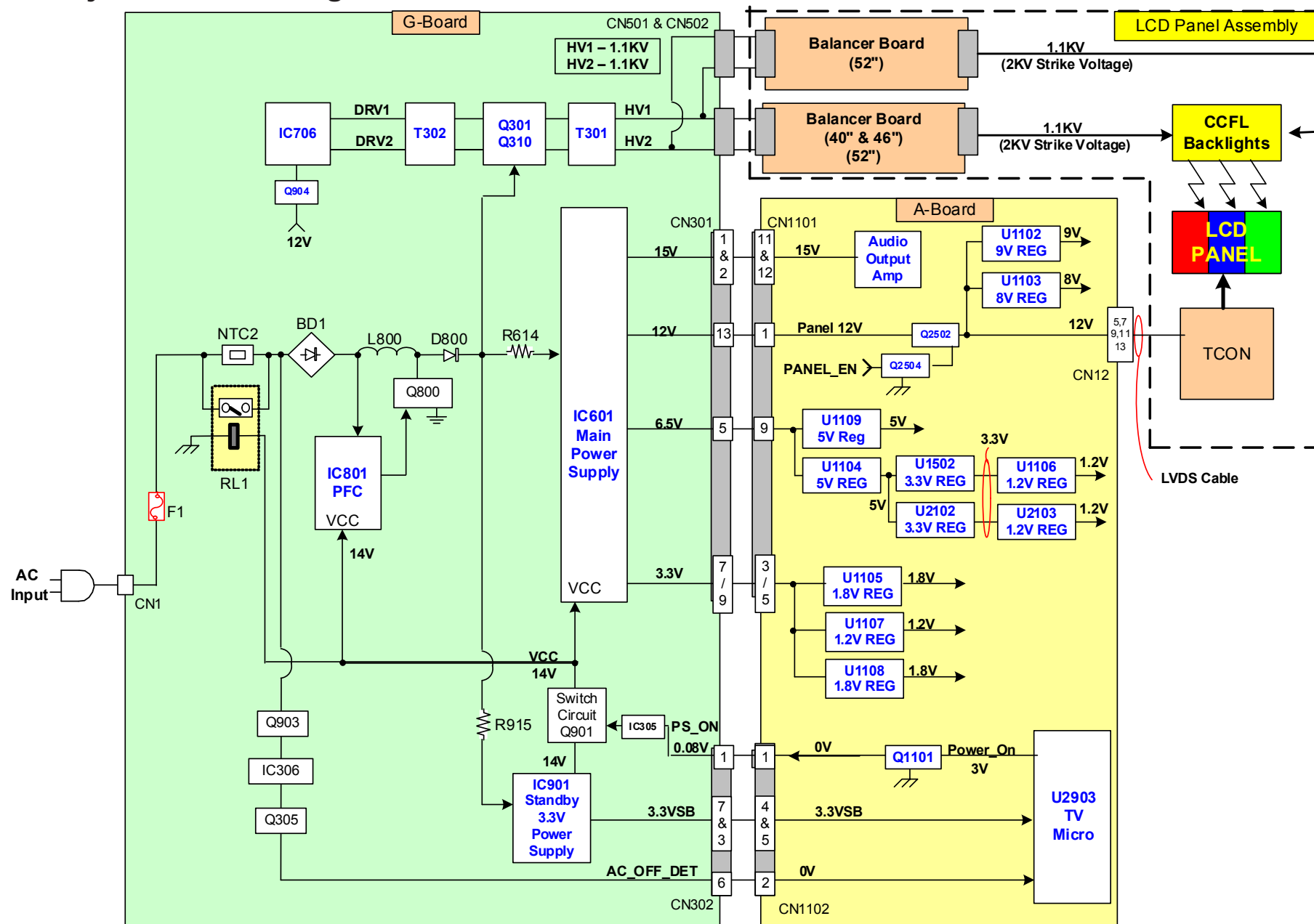
The Backlight Lamps generate the white light that passes through the liquid crystals in the LCD Panel.

Section 3 - Block Diagrams

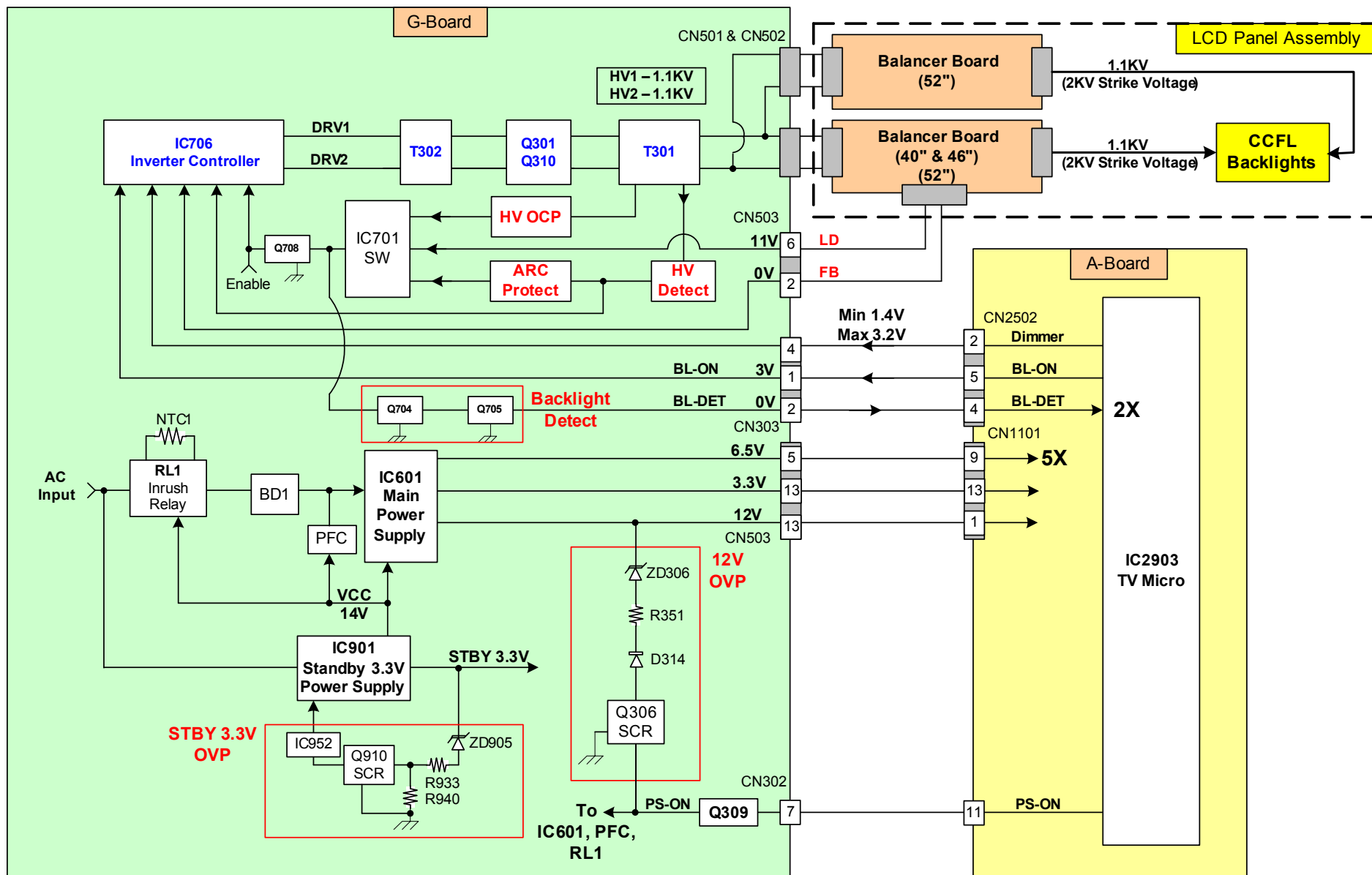
Overall Chassis Block Diagram



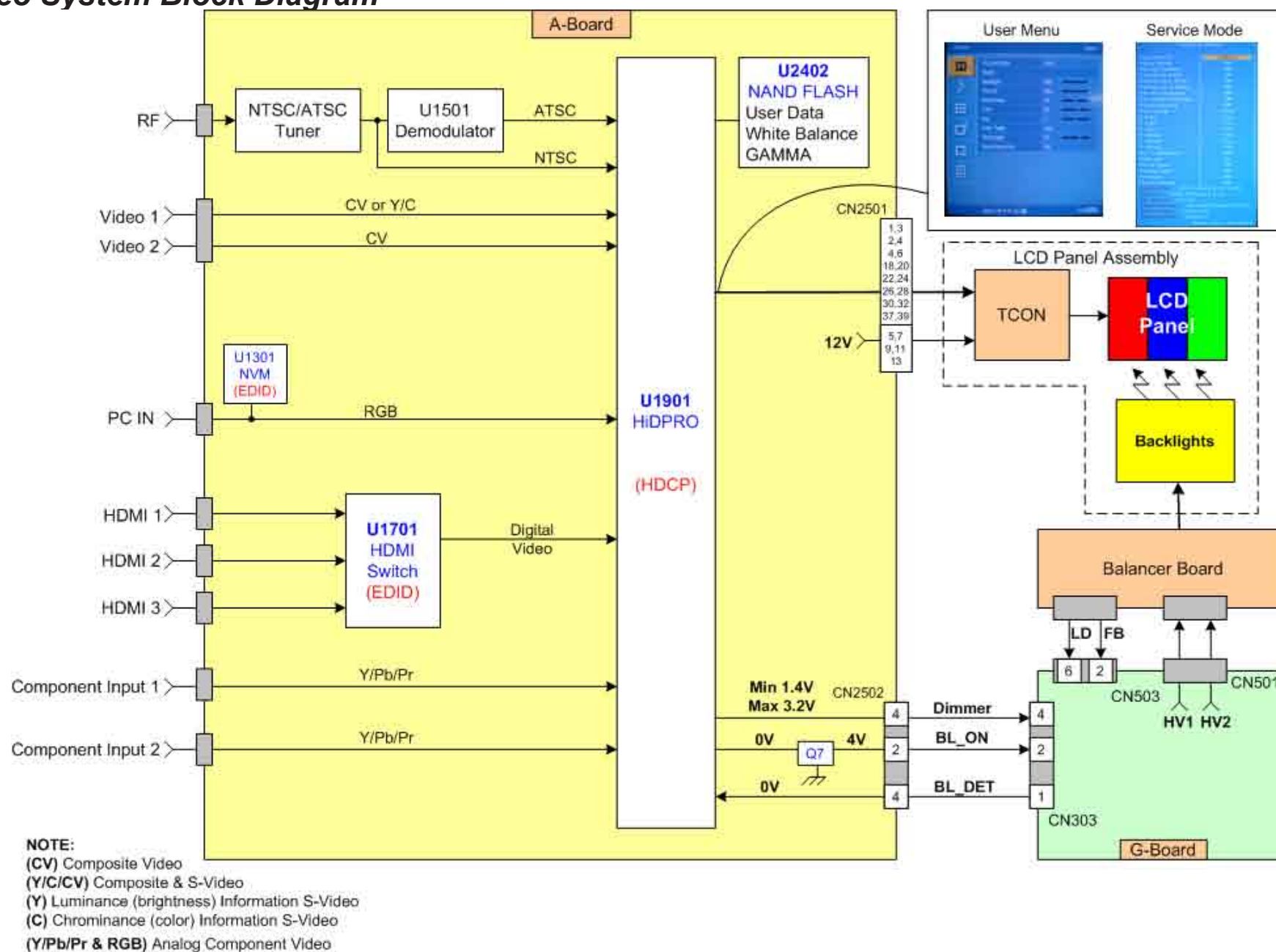
Power System Block Diagram



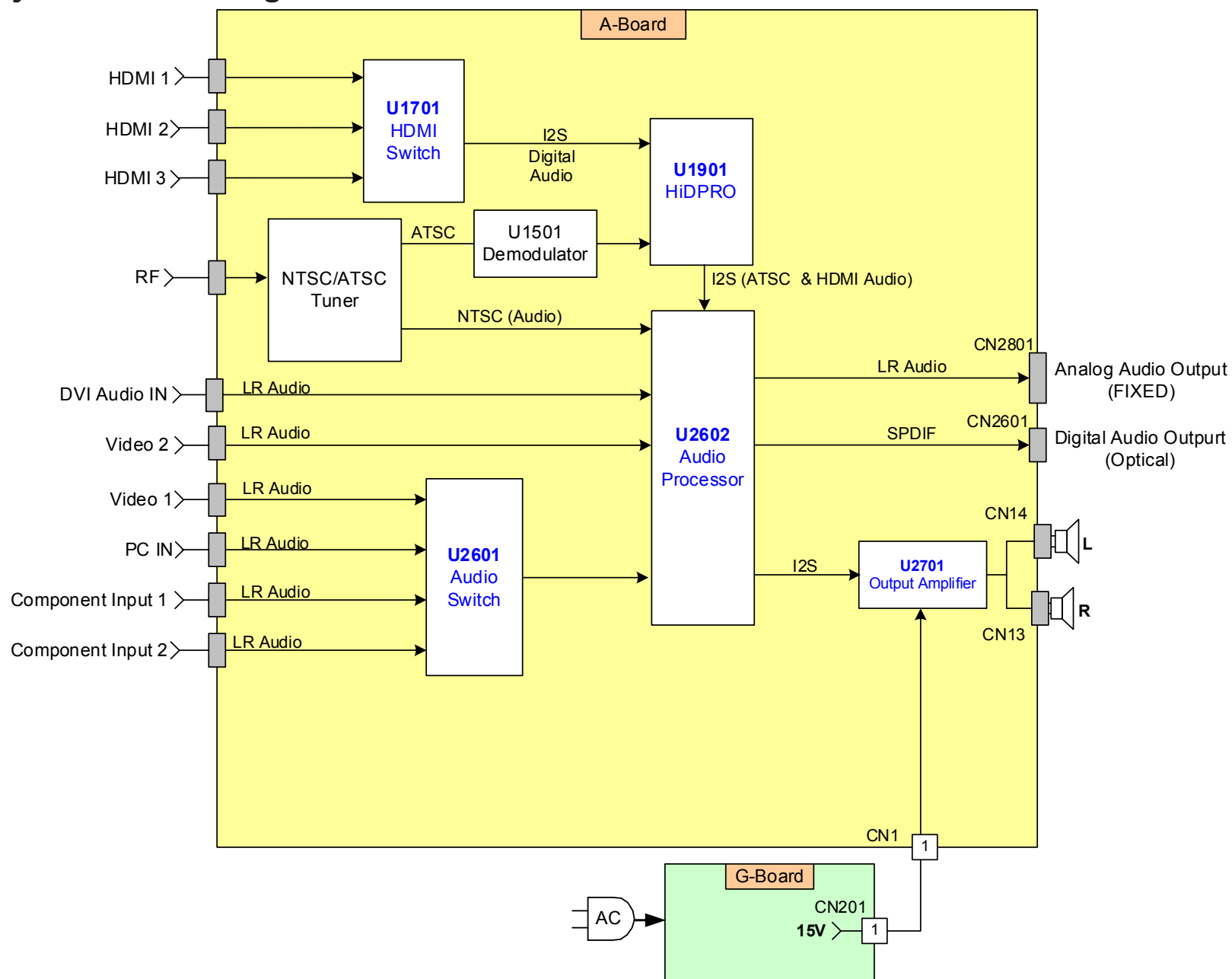
Protection Circuits Block Diagram



Video System Block Diagram



Audio System Block Diagram



Section 4 - Troubleshooting

Introduction

Important: *There is only two Self-Diagnostics routines (or Protection Mode LED Blink Patterns) programmed into the models covered in this training manual.* The two blink patterns are 2X and 5X. Measured, visual, and audible symptoms will be used in most TV failures to determine the cause of a defective unit.

The following Symptom & Solution scenarios have been developed to assist in the troubleshooting defective units. The symptoms are broken down into the major TV systems. The Power System, Backlight, Video, and Audio are covered.

Symptom & Solution

Reference the appropriate Block Diagrams in Section 2 of this manual and the Test Point Diagrams in this section as you read through the following symptom & solution procedures.

Power Supply System

Normal Operation

AC voltage is applied to the G-Board and can be measured at CN1. As long as AC is applied to the G-Board the Standby 3.3V power supply IC901 is active and outputting 3.3V. The Standby 3.3V is applied to the Microprocessor U2903 on the A-Board and the IR sensor (remote control sensor) on the H2-Board. The TV is now considered to be in the Standby mode. The Main power supply IC601 and the relay RL1 are off.

The Main power supply and relay are activated by a press of the top panel or remote control power button. The microprocessor outputs the PS_ON signal to activate the switch circuit Q901, and consequently, the main power supply, PFC, and relay using the 14V from the Standby power supply circuit. The main supply 15V, 12V, 6.5V, and 3.3V secondary voltages are developed.

Further voltages are developed on the A-Board using various regulators.

Many of the regulators' outputs can be checked directly on the component side of the A-Board. Reference figure 4-1.

TV will not Turn ON (Dead Set)

In a dead set condition, **No Relay Click** will be heard and there will be **No Green POWER LED illumination** when a power ON command is received from the Power button on the front panel or remote controller.

One of the following failures has occurred.

- **Loss of AC Power**
- **Loss of Standby 3.3V**
- **Excessive Standby 3.3V**
- **Loss of PS_ON Voltage**
- **Loss of AC_OFF_DET Voltage**

Reference Figures 3-1, 3-2, Power System Block, and Flowchart B

The first step in troubleshooting a "Dead Set" condition is to confirm that 110ACV power from an active AC outlet is applied to the G-Board. AC power is applied and can be measured at CN1 on the G-Board.

A missing or excessive Standby 3.3V supply will cause a "Dead Set" condition because the microprocessor will not be able to receive and process an ON command from the top panel or remote control power button. The Standby 3.3V is applied to the microprocessor and places it in the standby mode awaiting the Power-ON command. The Standby 3.3V can be checked at CN302/pins 3 & 7. In both the low and excessive STBY 3.3V conditions the voltage level at CN302/pins 3 & 7 will be 0V with AC applied to the TV.

A "Dead Set" condition can also be caused by a defective main microprocessor U2903. The main microprocessor outputs the PS_ON voltage which turns on the G-Board power supply circuits. If the PS_ON is not output after receiving the power-on command the power supply circuits remain inactive and a "Dead Set" condition exists.

Finally, a missing AC_OFF_DET voltage can cause a "Dead Set" condition.

The main purpose of this circuit is to notify the main microprocessor when 110V AC power has been removed in order to properly power down the TV. The proper sequence for power down is LCD panel circuits first and then all power supply circuits. If there is an open-circuit condition or a short to high condition on this line the microprocessor will detect a missing AC power condition and not allow the TV turn power on. The AC_OFF_DET is normally low (0V) and can be measured at CN302/pin 2.

TV Shuts OFF (No Blink Pattern)

Although these models do not have any official Self-Diagnostic Routines, there are Over-Voltage Protection (OVP) and Low-Voltage Protection (LVP) circuits on the G-Board that will cause the TV to shut off with no blink pattern indication. The 12V secondary voltage is monitored for an Over-Voltage condition (reference Protection Circuits Block Diagram). This voltage should be checked for proper level before the TV shuts off. The 12V can be measured at CN301/pin 13.

5X Blink Pattern (Lose of 6.5V)

A loss of 6.5V main power supply secondary voltage will cause the TV to shut off and activate a continuous 5X blink pattern on the Power LED. The 6.5V can be measured at CN301/pin 5.

Note: TV can only be turned off by cycling AC off / on.

Panel Backlight System

Normal Operation

The panel backlighting illuminates approximately 20 seconds after the H1-Board or remote control power button is pressed. The backlight remains illuminated and the information banner and video is immediately displayed.

Momentary Backlight - 2X Blink Pattern

The following five failures can cause a "2X Blink Pattern & Momentary Backlight" condition.

- **Defective Lamp or Lamps**
- **Defective Balancer Board (Single Output)**
- **Loss of BL_DET (G-Board)**
- **Loss of LD (Balancer Board)**

When the TV is turned on the backlight will momentarily illuminate and then immediately turn off. The video and audio are also momentarily present.

The only way to reliably determine if a lamp or Inverter HV output has failed is to check the Inverter HV output waveforms or ACV indirectly over the output transformer. Reference Figure 3-3 for a detailed Inverter HV output test procedure.

If a lamp has failed the HV output driving that lamp will be at an excessive high level. The Inverter output will be driven harder in an attempt to ignite the defective lamp. In contrast, a defective Inverter HV output will be at an excessively low level or missing all together.

The BL_DET comes from the G-board and is sent to the A-Board to be processed by the main microprocessor U2903. In normal operation this signal is low (0V). The circuit on the G-Board pulls this line low. Therefore, if this line remains high the G-Board is most likely defective.

The LD signal comes from the Balancer Board. The LD is the Balancer Board or Lamp failure signal. The LD is normally 11V. If the LD is going low before the TV shuts off, either the balancer board or a lamp is defective. At this point the only way to reliably determine whether the Balancer Board or Panel (Lamp) is defective is by checking the individual Balancer Board outputs for proper HV level. Reference figure 3-3 for a detailed diagram for checking the Balancer board HV outputs.

The HV signal level at the individual defective lamp will be slightly higher than normal.

No Backlight - No Blink Pattern (No Video or Audio)

There are two failures that will cause this symptom.

- **Lose of 12V (G Board)**
- **Lose of 3.3V (G Board)**

The TV turns ON normally. The green power LED illuminates after 20 seconds and there is no backlight. The TV remains ON with the Green Power LED illuminated and no blink pattern is activated. There is no video or audio. The reason why a lose of 12V causes this symptom is because the 12V is the feedback for the main power supply and it is also the supply for the backlight inverter section. Therefore, the main power supply and the backlight inverter are not activated after initial power ON. The 12V can be check at CN301/pin 13. If the 12V is missing replace the G-Board; if it is present replace the A-Board.

The 3.3V from the G-Board is the supply voltage for regulators on the A-Board which develop 1.8V and 1.2V for the TV microprocessor. Therefore, the 1.8V and 1.2V are not developed if the 3.3V is missing. However, the microprocessor is still partially power to turn the TV ON.

The 3.3V can be check at CN301/pin 7. If the 3.3V is missing replace the G-Board; if it is present replace the A-Board.

No Backlight - No Blink Pattern (Video & Audio OK)

There are two failures that will cause this symptom.

- **Grounded “Backlight ON” Signal (BL-ON)**
- **Defective Backlight Inverter Circuit (Lose of HV)**

The TV turns ON normally. The green power LED illuminates after 20 seconds and there is no backlight. The TV remains ON with the Green Power LED illuminated and no blink pattern is activated. Video and audio is present.

The presence of video can be confirmed by using a flash light to illuminate various areas on the front of the LCD panel. Video can be seen in the illuminated areas.

A short to ground (not an open) on the BL-ON line (CN303/pin 1) will cause a “No backlight - No Blink - Video & Audio OK” symptom. With a DMM check from chassis ground to CN303/pin 1 for a zero ohm reading. Disconnect the connector to CN303/pin 1 and check the connector on the G-Board and the connector on the A-Board for a short to ground to determine whether the short is on the G-Board or A-Board.

A lose of the HV from the Inverter circuit on the G-Board will also cause a “No backlight - No Blink - Video & Audio OK” symptom. Reference figure 3-3 for a detailed procedure on how and where to check for the presence of HV.

Momentary Backlight - No Blink Pattern (Video & Audio OK)

There is one failure that will cause this symptom.

- **Lose of Feedback FB (from Balancer Board)**

The TV turns ON normally. The green power LED illuminates after 20 seconds; the backlight momentarily turns ON and then shuts off. The TV remains ON with the Green Power LED illuminated and no blink pattern is activated. The video and audio are also present. The presence of the video can be confirmed by illuminating the front of the LCD panel with a flashlight. In the lighted areas video can be seen.

The FB waveform can be check at CN503/pins 2 & 3 on the G-Board. Reference Figure 3-3 for a detailed diagram for checking the FB waveform.

The TV's total current draw is also a good indicator in determining if the FB is present. The total current draw can be measured using an AC isolated power supply with a current meter. If the FB is present the current draw will be approximately 2 amps. If the FB is missing the current draw will be excessive, approximately double at 4 amps.

Backlight ON - No Video -Bright Raster Only - Audio OK

The two failures that can cause this symptom are as follows.

- **Lose of 12V at the TCON Board (Physical Connection)**
- **Defective TCON Board**

In most cases this symptom is caused by a defective TCON board. The fact that only a bright raster is displayed (no partial video or colored lines) indicates a non-functioning TCON board.

Before replacing the LCD Panel assembly (TCON is part of the LCD Panel Assembly) check that the 12V panel supply is at CN12. Reference figure 3-4 for 12V pin location on CN12.

If the 12V is present replace the LCD Panel assembly.

If the 12V is missing check the physical condition of the LVDS cable and replace if physical damaged. If the LVDS cable is okay replace the A-Board.

Backlight ON - No Video - Vertical Colored Lines Displayed - Audio OK

- **Defective A-Board**

The fact that color lines (reference Figure 3-5) are displayed is a strong indication that the TCON board is functioning. However, there is most likely a complete lose of video signal drive from the A-Board to the TCON board. The vertical lines are randomly generated by the TCON due to the lost of video and sync drive from A-Board. The TCON 12V supply is present at CN12.

Video Processing System

IMPORTANT: Before proceeding with the following video troubleshooting procedures it is assumed that the TV is turning on with the Green Power LED illuminated, Backlight illuminated (bright raster), and the Audio is present.

When a video problem occurs you will experience one of the two following symptoms.

Input Status:

- **Missing or Distorted Video on All Inputs**
- **Missing or Distorted Video on Individual Inputs**

Video Anomaly:

- **Poor Detail**
- **Moving Video Distortion (e.g. Bars)**
- **Static H/V Lines (black, white, or color)**
- **White Balance**
- **Gamma**

The main objective when troubleshooting one of the previously listed symptoms is to determine if the defect exists in the following sections of the TV system.

- LCD Panel Assembly (Includes the TCON Board)
- A-Board

No Video

If the video is completely **missing** you will first use the On-Screen-Display (OSD) to possibly isolate the defect to the A-Board or the LCD Panel Assembly.

If either the **USER Menu OSD** can be displayed then the LCD Panel assembly is okay, and you can safely assume the defect exists on the A-Board. However, if the USER Menu OSD cannot be displayed you need to do further troubleshooting because either U18 is not sending the OSD or the LCD Panel assembly is not able to display the OSD.

If the OSD cannot be displayed then the LVDS Signal test procedure detailed in figure 3-4 should be followed to reliably determine whether the A-Board or the LCD Panel (TCON) is defective.

- 1) Check for USER Menu OSD Display
 - a) USER Menu Displays. Replace A-Board
 - b) USER Menu Does Not Display. Go to Step 2
- 2) Check for 12V at CN201/pin 7
 - a) No 12V. Replace G-Board
 - b) 12V Present. Go to Step 3
- 3) Check LVDS Cable Video Signal Levels. Reference Figure 3-4 for a Detailed LVDS Video Signal Test Procedure (Oscilloscope or DMM).
 - a) LVDS Video Signal(s) Low or Missing. Replace A-Board
 - b) LVDS Video Signals Okay. Replace LCD Panel Assembly

Distorted Video

Common Components to All Inputs that can affect video quality.

The two components common to all inputs are as follows.

- LCD Panel Assembly
- A-Board

Both of the components listed, if defective, will have a somewhat unique affect on the displayed video.

The A-Board Affects

Reference Figure 3-7 for photographs illustrating possible defective A-Board video symptoms.

A video distortion that has **soft edges** and/or is **moving** through the video is most likely caused by a defect in the video processing circuitry. All video processing circuitry is located on the A-Board. Therefore, replace the A-Board if the video distortion has soft edges and/or is moving through the video on the screen. **Macro-Blocking** is a good example of this type of distortion. Be careful though, macro-blocking can also be caused by a weak RF signal when the TV is in the tuner mode.

• **Solarization or Complete Pixilation (Reference Figure 3-7 for photos of distortion)** - This distortion will be caused by defective TCON board. However, before replacing the LCD Panel check the physical condition of the LVDS cable and check the LVDS video levels. In some cases this symptom can be mistaken for a lose of a single LVDS video line form the A-Board. Figure 3-4 provides a detailed LVDS video level troubleshooting procedure.

• **Poor Picture Detail** - A loss of overall picture detail will be caused by a defective U18 and associated circuitry.

• **White Balance (WB) Irregularity** - a WB irregularity will show up as an overall poor reproduction of white. A white raster can be used to determine if a WB or gamma irregularity has occurred. WB will cover the complete picture, where as, gamma will be in specific zones or specific color areas in the picture. WB adjustment data is stored in the EEPROM on the A-Board.

• **Gamma Irregularity** - Gamma Correction affects the overall picture brightness level and individual color (RGB) brightness levels. Gamma adjustment data is stored in the EEPROM on the A-Board. The data may become corrupted causing irregular gamma adjustment. The gamma adjustment is divided up into zones over the entire screen. Therefore, a gamma distortion can show up as a color brightness irregularity in specific zones or specific color areas in the picture, as well as an irregularity in overall picture brightness.

• **Complete “White Screen”** - This “White Screen” is different from

the normal “Bright Raster”, which is actually a bluish raster. The “White Screen” is a complete opening of all LCD pixels allowing all light from the backlight to pass. The A-board can cause this failure due to a loss of 3V (ODEN) to the TCON. Reference Figure 3-4 for the location of the ODEN test point. If the 3V is missing the A-Board 3V regulator has failed. If the 3V is present the TCON board has failed.

LCD Panel Assembly Affects (& TCON Board)

Reference Figure 3-7 & 3-8 for photographs illustrating possible defective LCD-Panel or TCON board video symptoms.

- ***Line(s) of Pixels (Fixed Position)*** - poor bonding between the LCD Panel and the flex cables will cause a loss of line(s) of pixels.
- ***Random Line(s) of Pixels (Random Movement)*** - The TCON board controls the charging and timing of the pixels. If the TCON is partially defective random lines and/or pixels will be seen randomly flashing across the screen.
- ***Solarization or Complete Pixilation (Reference Figure 3-7 for photos of distortion)*** - This distortion will be caused by defective TCON board. Before replacing the LCD Panel check the physical condition of the LVDS cable and check the LVDS video levels. Figure 3-4 provides a detailed LVDS video level troubleshooting procedure.
- ***Half-Screen Video*** - The TCON board drives the LCD panel in two separate halves. Consequently, if either of the drive circuits fail a loss of video in exactly half of the screen will occur. The video and audio will be active in the function half of the screen.
- ***Complete “White Screen”*** - This “White Screen” is different from the normal “Bright Raster”, which is actually a bluish raster. The “White Screen” is a complete opening of all LCD pixels allowing all light from the backlight to pass. The A-board can cause this failure due to a loss of 3V (ODEN) to the TCON. Reference Figure 3-4 for the location of the ODEN test point. If the 3V is missing the A-Board 3V regulator has failed. If the 3V is present the TCON board has failed.

Audio Troubleshooting

The first step when a “Missing or Distorted Audio” defect occurs is to determine if audio is missing on all audio input sources or if there is missing audio only on one or a select number of audio input sources or speakers.

Input Status:

- **Missing or Distorted Audio on All Inputs**
- **Missing or Distorted Audio on Individual Inputs**

Missing or Distorted Main Speaker Audio - All Inputs

In this case, the most likely defective is the A-Board. Before you replace the A-Board perform the following test procedures to confirm the actual defective component.

- 1) Check for audio at the FIX or DIGITAL Audio Output
 - a) No or Distorted Audio (Replace A-Board)
 - b) Audio Present & Undistorted. Go to Step 2
- 2) Check for 15V at CN1/pin 1 on A-Board
 - a) No 15V. Replace G-Board
 - b) 15V Present. Replace A-Board

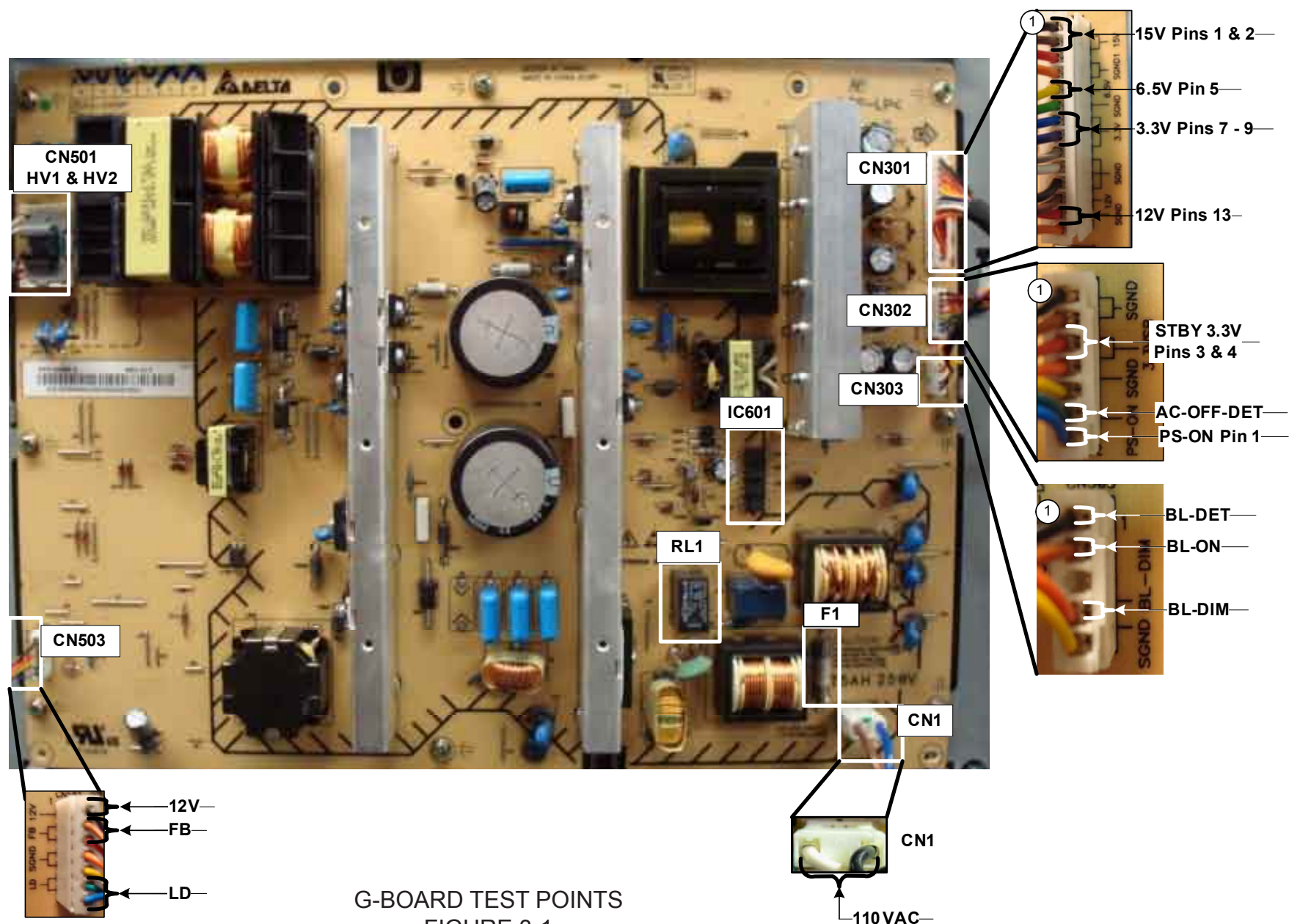
Missing or Distorted Audio - Individual Inputs

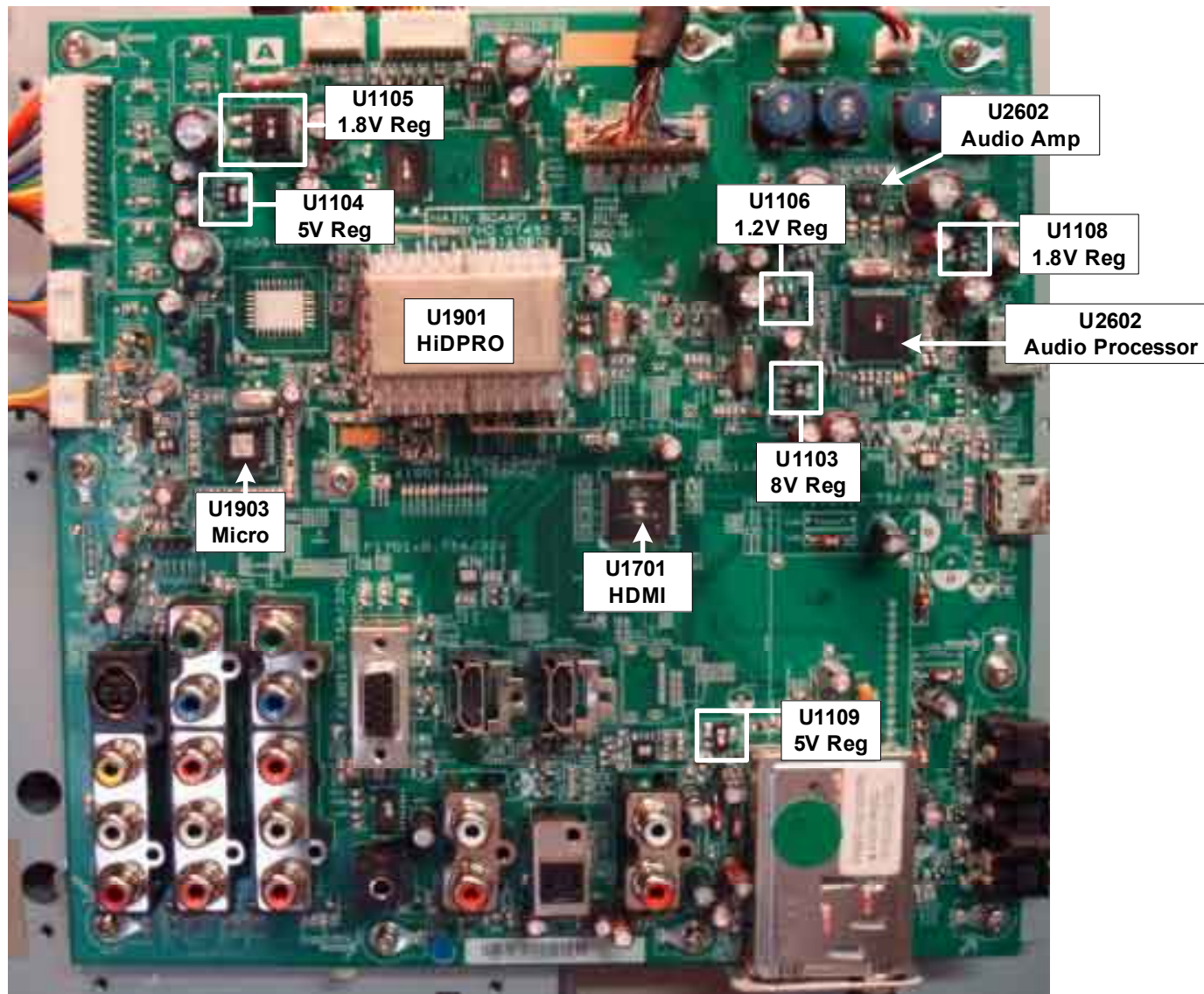
If only one or a select number of input sources are experiencing a problem, then the individual inputs must be checked separately. The external devices and their associated cables connected to the faulty input should be checked first.

Substitute a known good device and cable on the suspected faulty input. Connect the device and cable at separate times to determine if the device or cable is causing the problem. Replace the device or cabling if found to be defective. However, if the external device and cables are okay, then the next step is to replace the common board or module associated with that particular input source.

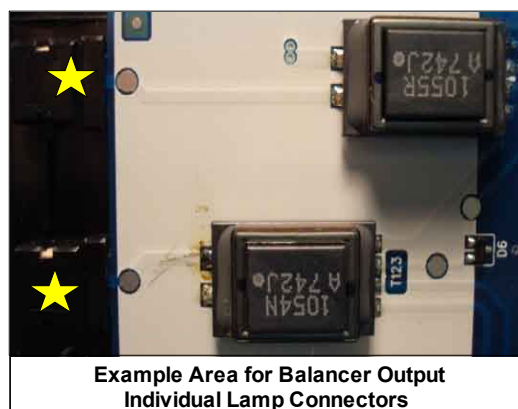
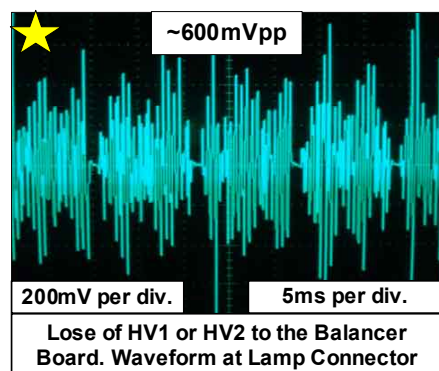
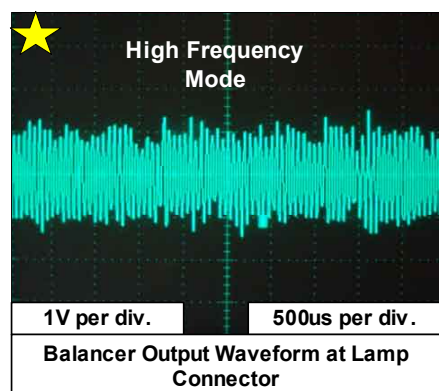
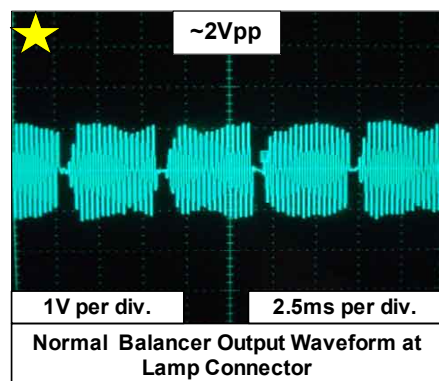
For example, consider the symptom of Composite 1 audio, DVI Audio, PC-IN Audio, and Component 2 audio inputs are faulty and all other inputs are okay. Logically, the only device that could cause this symptom is the switcher U22 on the A-Board. The most likely problem is one or more of the switcher inputs are defective. In this case, replace the A-Board.

Another example would be missing or distorted audio on one or both HDMI input only. The only component that would affect only the HDMI audio inputs is the HDMI switcher U20 on the A-Board. Therefore, replacing the A-Board should fix this problem.





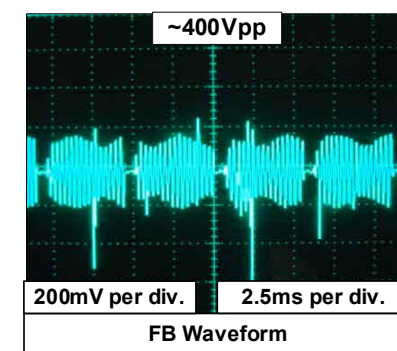
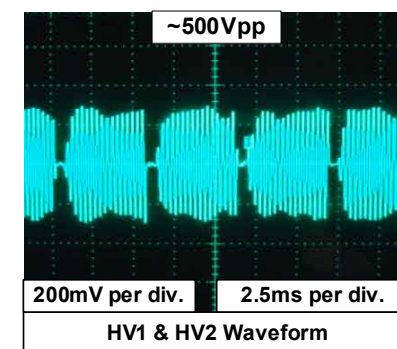
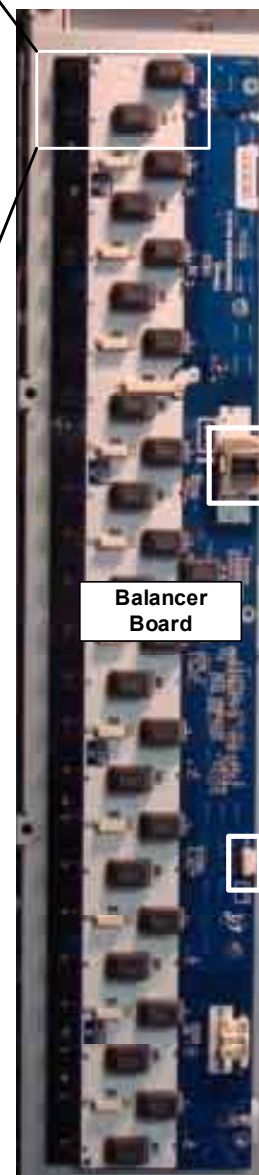
A-BOARD TEST POINTS
FIGURE 3-2



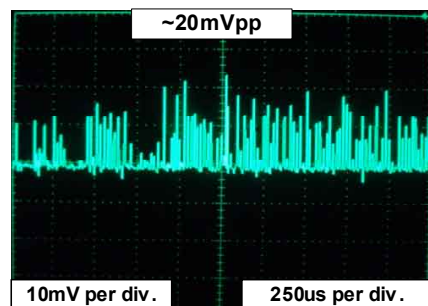
★ Place a DMM probe (set to AC Volts) over any one of the positions indicated by the yellow stars to measure approximately **3VAC** for a good Balancer output.

OR

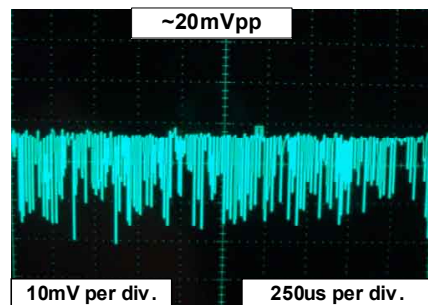
★ Place an Oscilloscope probe over any one of the positions indicated by the yellow stars to see the waveforms below



INVERTER BOARD TEST POINTS
FIGURE 3-3



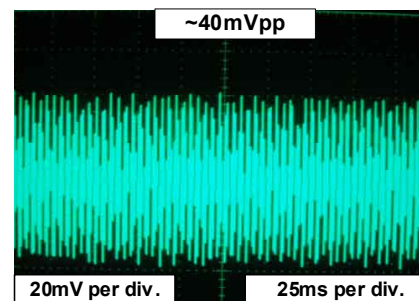
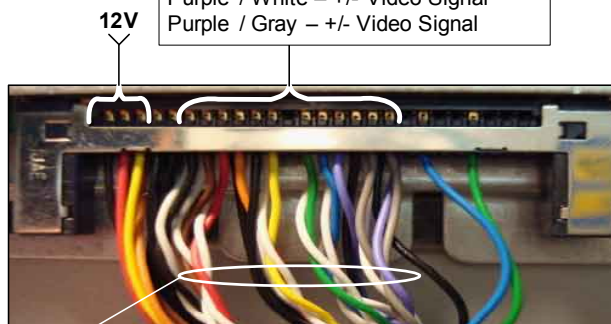
TXA & TXB (Positive Video Signal)



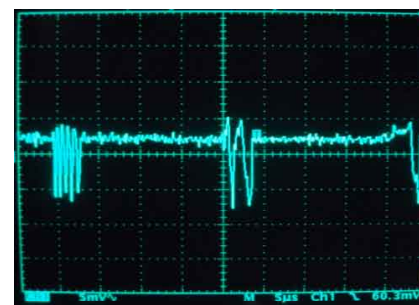
TXA & TXB (Negative Video Signal)

Digital Multi-Meter Measurements
 Video Signal - AC Voltage Measurement – Approx. 30mVAC
 Clock Signal - AC Voltage Measurement – Approx. 15mVAC
 No Video AC Voltage Measurement - Approx. 5mVAC

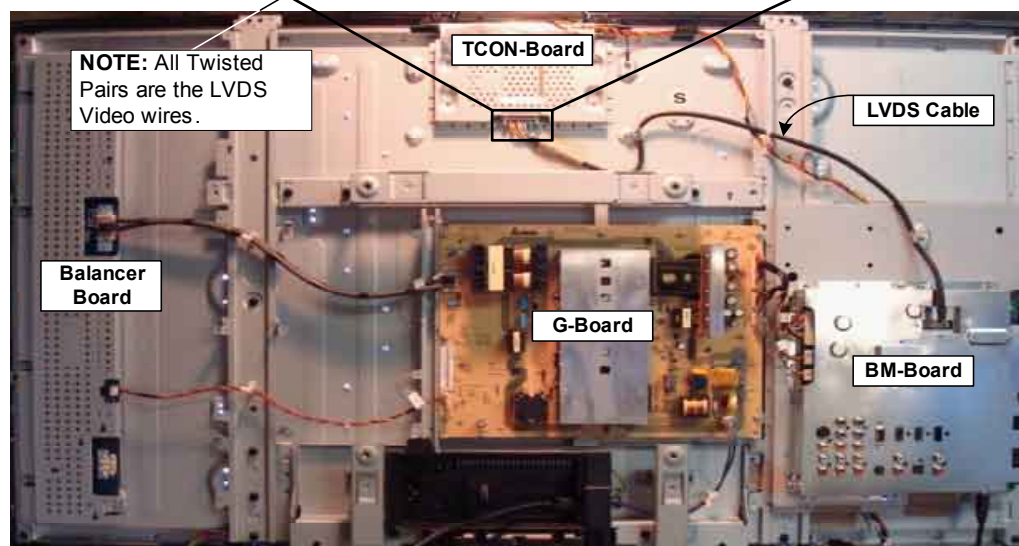
Black / White – +/- Video Signal
 Brown / White – +/- Video Signal
 Red / White – +/- Video Signal
 Orange / White – Clock Signal
 Yellow / White – +/- Video Signal
 Green / White – +/- Video Signal
 Blue / White – +/- Video Signal
 Gray / White – Clock Signal
 Purple / White – +/- Video Signal
 Purple / Gray – +/- Video Signal



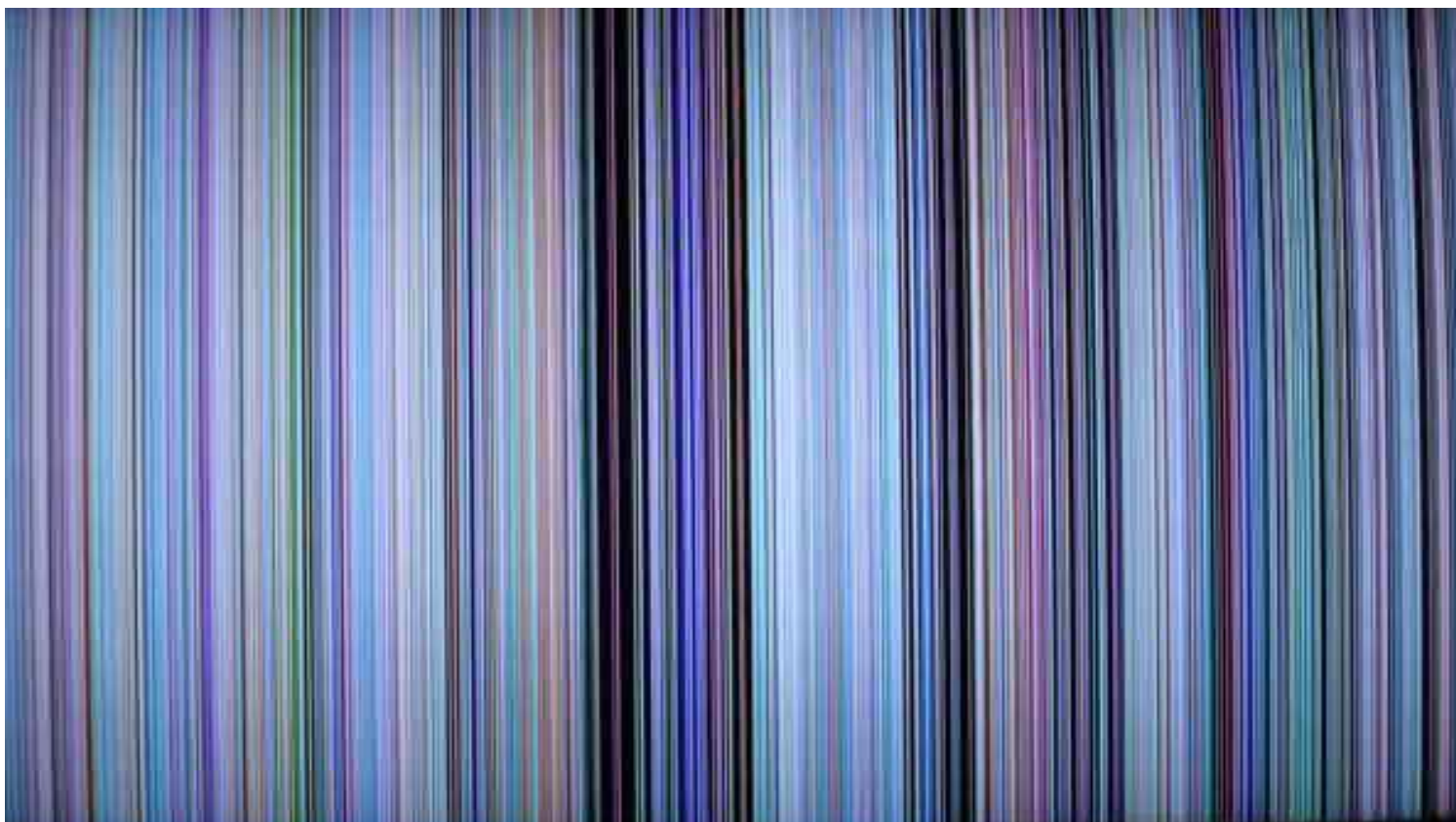
TXAC & TXBC



Loss of Video Signal on LDVS Line

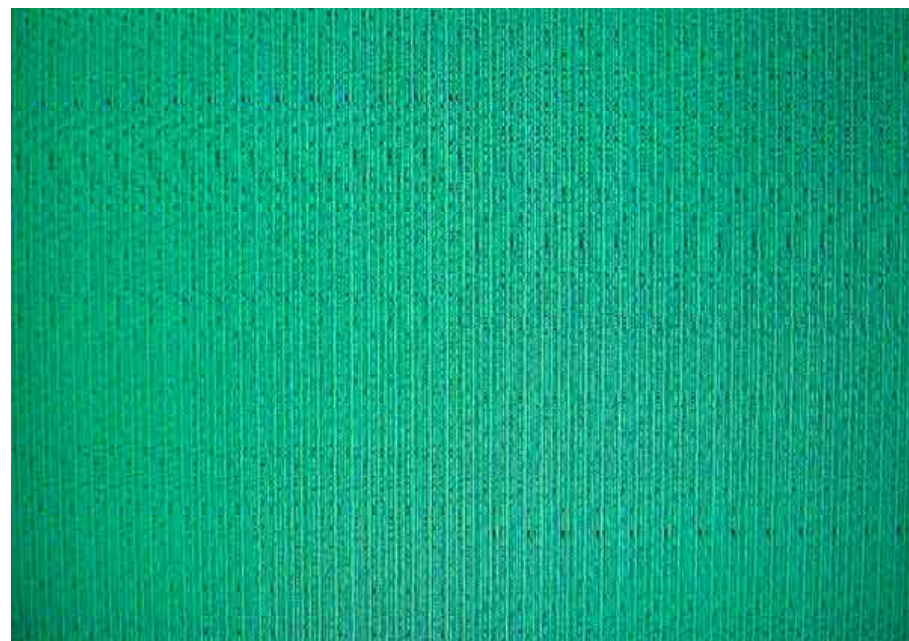
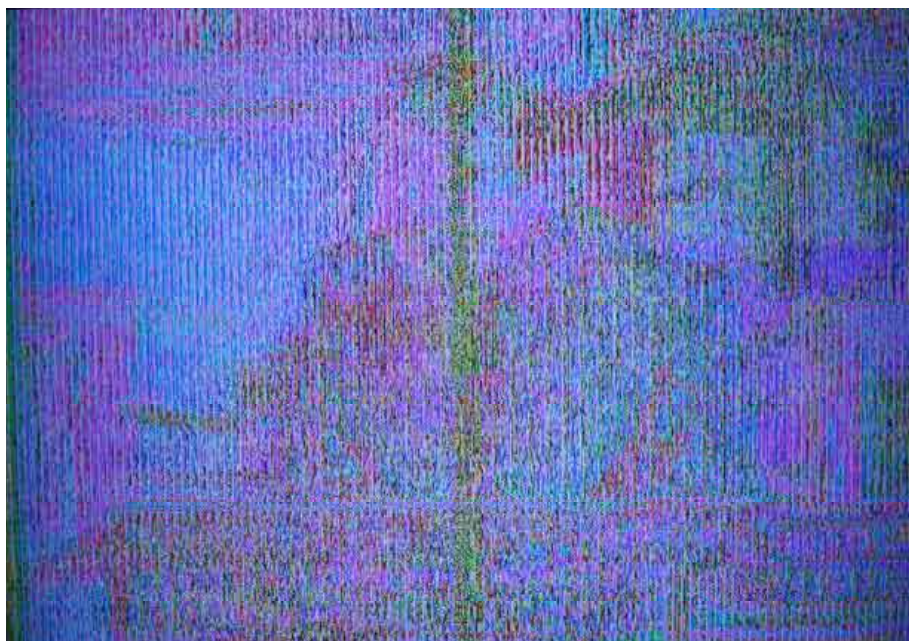


LVDS VIDEO SIGNAL
TEST POINTS
FIGURE 3-4



Complete Lose of LVDS Signals from A-Board to the TCON board / 12V OK to TCON board / Audio OK

COMPLETE LOSE OF VIDEO DRIVE TO TCON BOARD
FIGURE 3-5



These are examples of video distortions caused by an internal defective of the MTK5380 IC or a defective Y1 crystal on the A-board. In some cases the video is frozen behind the distortion. This frozen video symptom is a good indication that the defective component is on the A-Board not the TCON board. In the TCON board distortions the video will be active.

DEFECTIVE A-BOARD DISTORTIONS
FIGURE 3-6

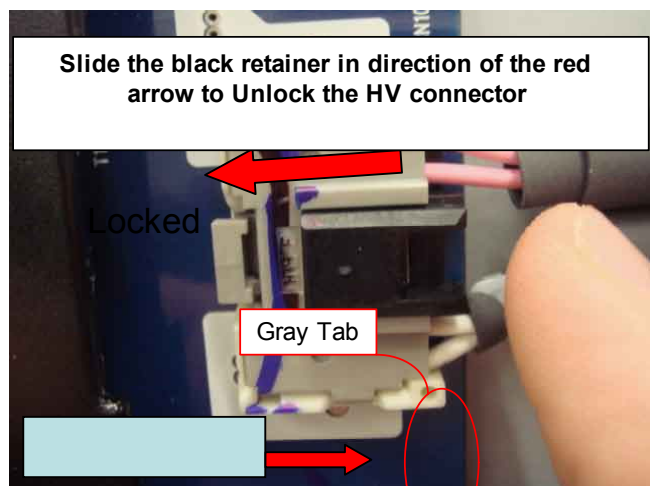


TCON BOARD FAILURE COMPLETE PIXELIZATION
FIGURE 3-7

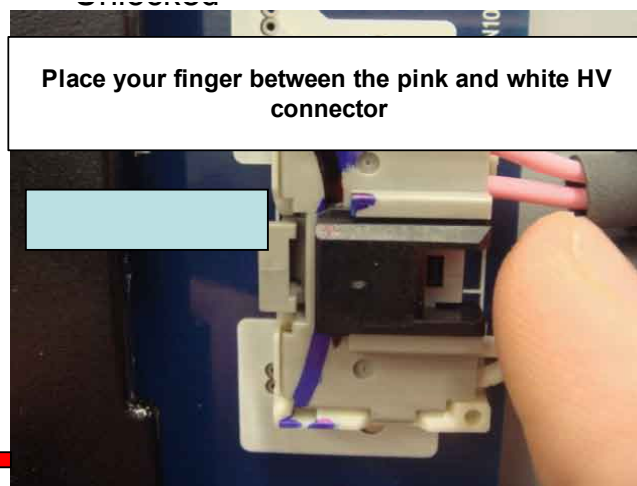


These are examples of Half-Screen or Complete-Screen lose of video caused by a defective TCON board. The video and audio is okay and active on the function half of the screen. The complete lose of video example symptom will be a complete white raster (vertical color lines may be present) with audio okay. Before replacing the Panel Assembly confirm 3.3V (ODEN) is present at the TCON board.

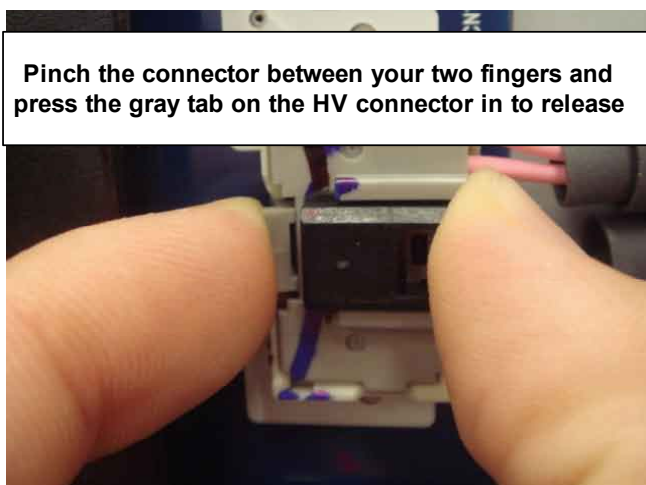
DEFECTIVE TCON BOARD DISTORTIONS
FIGURE 3-8



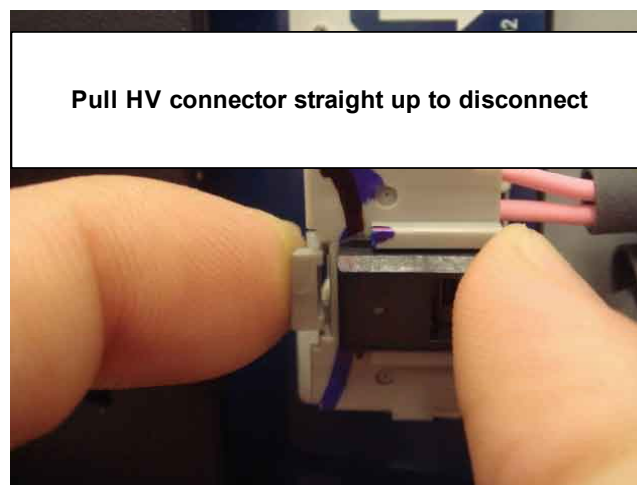
(a) Slide the retainer as the picture for unlock MDF61 connector.



(b) Fit the finger to retainer as the picture.



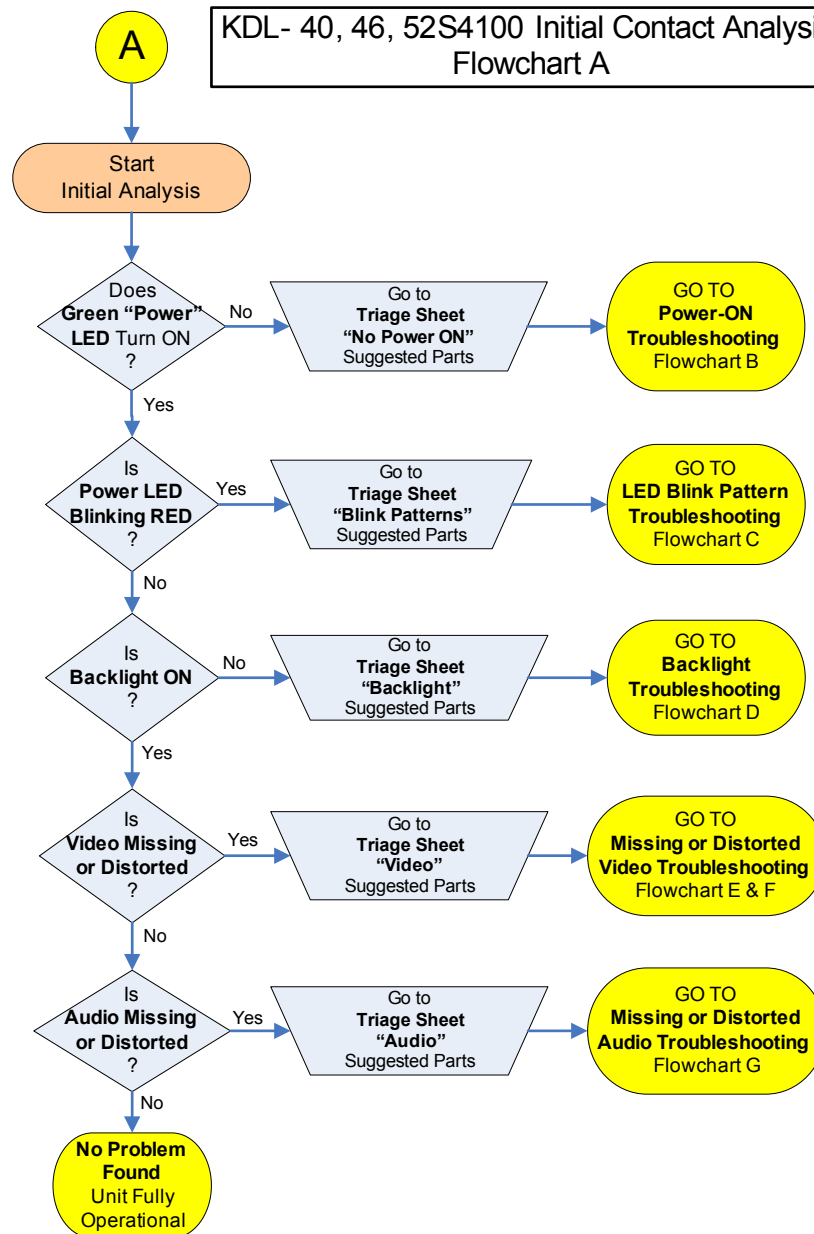
(c) Clutch between the retainer to hook on the MDF61 connector as the picture.



(d) Detach cable housing vertically within clutch.
If you detach it not vertically, connector may broken.

HV CONNECTOR
REMOVAL
FIGURE 3-9

Section 5 - Technical Troubleshooting Flowcharts



Sony KDL-40S4100 Technical Triage Summary Sheet

Before you make the service call...

Chassis: FX

Last Update: 09/12/2008

1. Confirm the symptom from the customer.
2. Select that symptom from the chart.
3. Bring all the boards listed for that symptom.
4. Follow the troubleshooting flowcharts in the technical guides to isolate the board.
5. Chart Color Code

RED DOT: (Primary) Most likely defective part

BLUE Triangle: (Secondary) Possible defective part

Green Square: (Last resort) Improbable defective part

BLACK TEXT: Board and Part # that may correct the symptom

7) The **Troubleshooting Flowchart** required to determine the actual defective part is listed for each column in the last row of e:

	Symptom										
Board Reference	No Power ON (Dead Set)	Momentary Backlight No Blink A & V OK	No Backlight No Blink No Audio	No Backlight No Blink Audio OK	2 Blink Momentary Backlight	5 Blink	Video Distorted	No Video Backlight OK Audio OK	Audio Distorted	No Audio No Video Backlight OK	Component Part Numbers
A	▲		▲	▲		▲	●*	●	●	●	*SEE NOTE
G	●	▲	●	●	▲	●				▲	*SEE NOTE
H1	■										1-857-094-11
H2	■										1-857-095-11
LCD Panel		●			●		●**	▲			*SEE NOTE
LVDS Cable							▲	▲			*SEE NOTE
Speakers									▲	■	1-826-946-11 (single speaker)
Flowchart Reference	B	D	D	D	C	C	F	E	G	G	
Problem	Power	Backlight or Inverter	Backlight or Inverter	Backlight or Inverter	Backlight or Inverter	Power	Video	Video	Audio	Audio	

●* White Balance, Gamma, Detail Distortion

●** Fixed Pixel, Fixed Line, TCON Distortion

***NOTE: REFER TO LCD PANEL SERVICE MANUAL IN REFERENCE LIBRARY DATABASE FOR CORRECT REPLACEMENT PARTS BASED ON SERIAL NUMBER.**

Sony KDL-46S4100 Technical Triage Summary Sheet

Before you make the service call...

Chassis: FX

Last Update: 09/12/2008

1. Confirm the symptom from the customer.
2. Select that symptom from the chart.
3. Bring all the boards listed for that symptom.
4. Follow the troubleshooting flowcharts in the technical guides to isolate the board.
5. Chart Color Code

RED DOT: (Primary) Most likely defective part

BLUE Triangle: (Secondary) Possible defective part

Green Square: (Last resort) Improbable defective part

BLACK TEXT: Board and Part # that may correct the symptom

7) The **Troubleshooting Flowchart** required to determine the actual defective part is listed for each column in the last row of ea

	Symptom										
Board Reference	No Power ON (Dead Set)	Momentary Backlight No Blink A & V OK	No Backlight No Blink No Audio	No Backlight No Blink Audio OK	2 Blink Momentary Backlight	5 Blink	Video Distorted	No Video Backlight OK Audio OK	Audio Distorted	No Audio No Video Backlight OK	Component Part Numbers
A	▲		▲	▲		▲	●*	●	●	●	*SEE NOTE
G	●	▲	●	●	▲	●				▲	*SEE NOTE
H1	■										1-857-094-11
H2	■										1-857-095-11
LCD Panel		●			●		●**	▲			*SEE NOTE
LVDS Cable							▲	▲			*SEE NOTE
Speakers									▲	■	1-826-946-11 (single speaker)
Flowchart Reference	B	D	D	D	C	C	F	E	G	G	
Problem	Power	Backlight or Inverter	Backlight or Inverter	Backlight or Inverter	Backlight or Inverter	Power	Video	Video	Audio	Audio	

●* White Balance, Gamma, Detail Distortion

●** Fixed Pixel, Fixed Line, TCON Distortion

***NOTE: REFER TO LCD PANEL SERVICE MANUAL IN REFERENCE LIBRARY DATABASE FOR CORRECT REPLACEMENT PARTS BASED ON SERIAL NUMBER.**

Sony KDL-52S4100 Technical Triage Summary Sheet

Before you make the service call...

1. Confirm the symptom from the customer.
2. Select that symptom from the chart.
3. Bring all the boards listed for that symptom.
4. Follow the troubleshooting flowcharts in the technical guides to isolate the board.
5. Chart Color Code

RED DOT: (Primary) Most likely defective part

BLUE Triangle: (Secondary) Possible defective part

Green Square: (Last resort) Improbable defective part

BLACK TEXT: Board and Part # that may correct the symptom

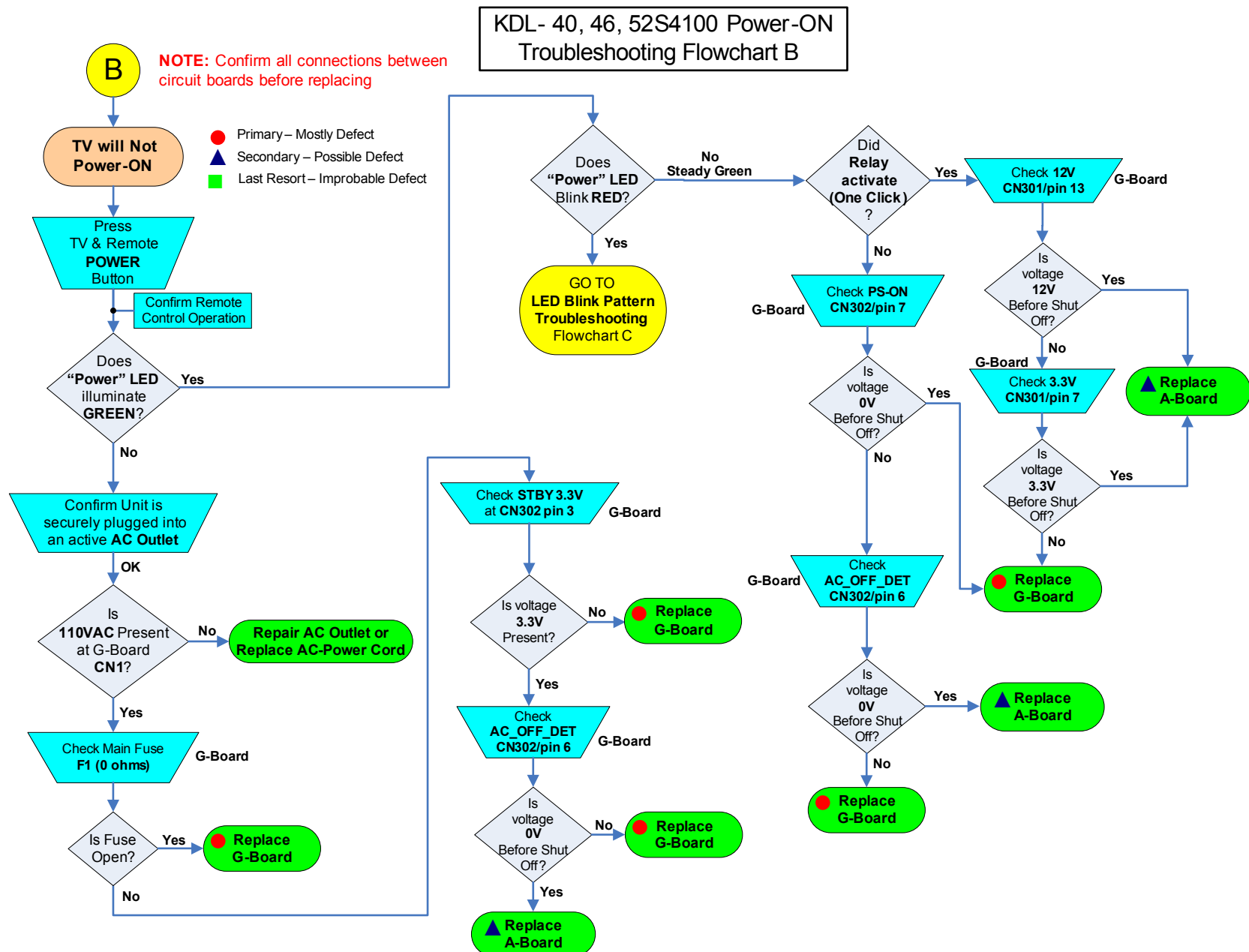
7) The **Troubleshooting Flowchart** required to determine the actual defective part is listed for each column in the last row of each

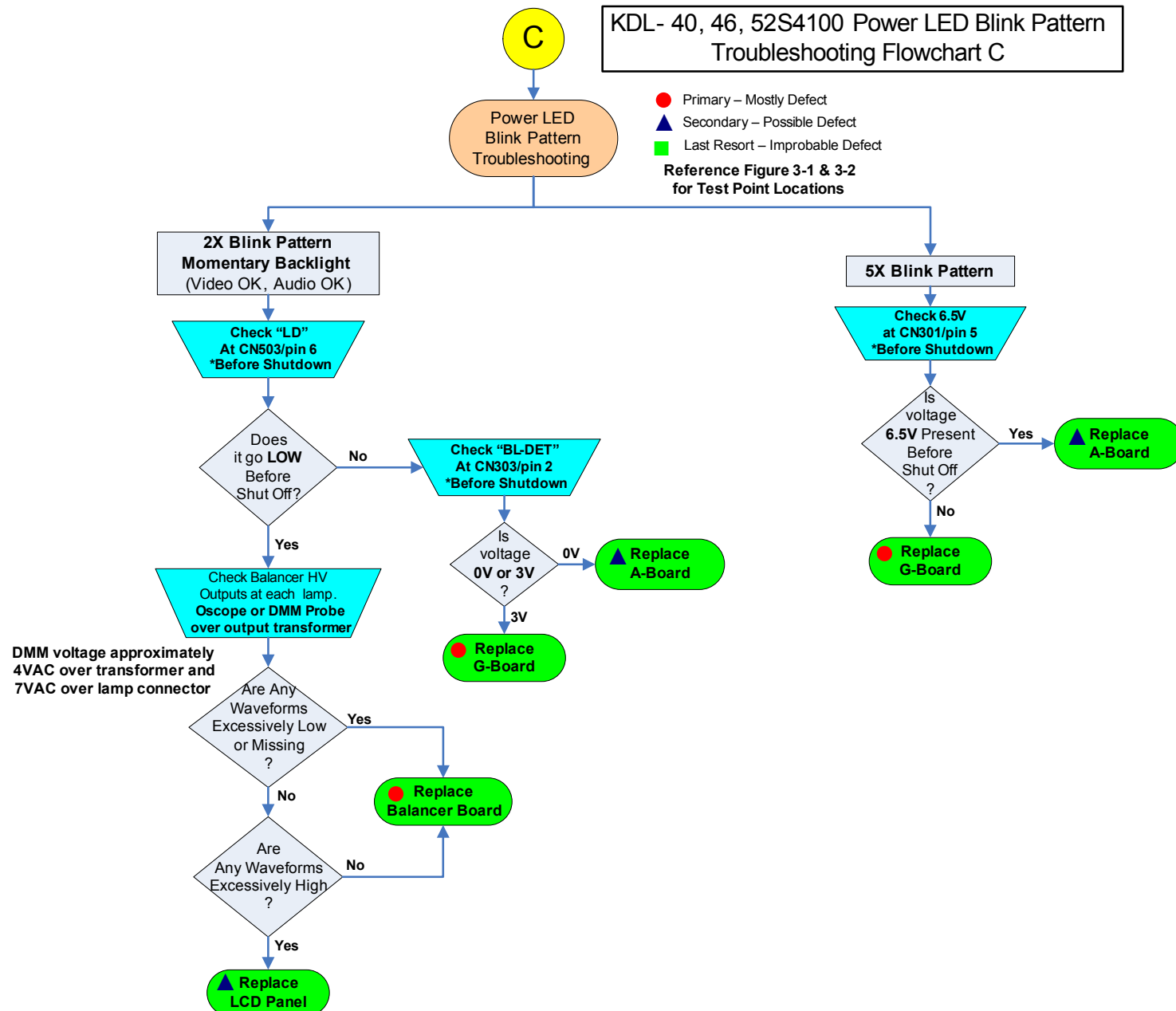
	Symptom										
Board Reference	No Power ON (Dead Set)	Momentary Backlight No Blink A & V OK	No Backlight No Blink No Audio	No Backlight No Blink Audio OK	2 Blink Mometary Backlight	5 Blink	Video Distorted	No Video Backlight OK Audio OK	Audio Distorted	No Audio No Video Backlight OK	Component Part Numbers
A	▲		▲	▲		▲	●*	●	●	●	*SEE NOTE
G	●	▲	●	●	▲	●				▲	*SEE NOTE
H1	■										1-857-094-11
H2	■										1-857-095-11
LCD Panel		●			●		●**	▲			*SEE NOTE
LVDS Cable							▲	▲			1-910-050-48
Speakers									▲	■	1-826-959-11 (single speaker)
Flowchart Reference	B	D	D	D	C	C	F	E	G	G	
Problem	Power	Backlight or Inverter	Backlight or Inverter	Backlight or Inverter	Backlight or Inverter	Power	Video	Video	Audio	Audio	

●* White Balance, Gamma, Detail Distortion

●** Fixed Pixel, Fixed Line, TCON Distortion

***NOTE:** REFER TO LCD PANEL SERVICE MANUAL IN REFERENCE LIBRARY DATABASE FOR CORRECT REPLACEMENT PARTS BASED ON SERIAL NUMBER.





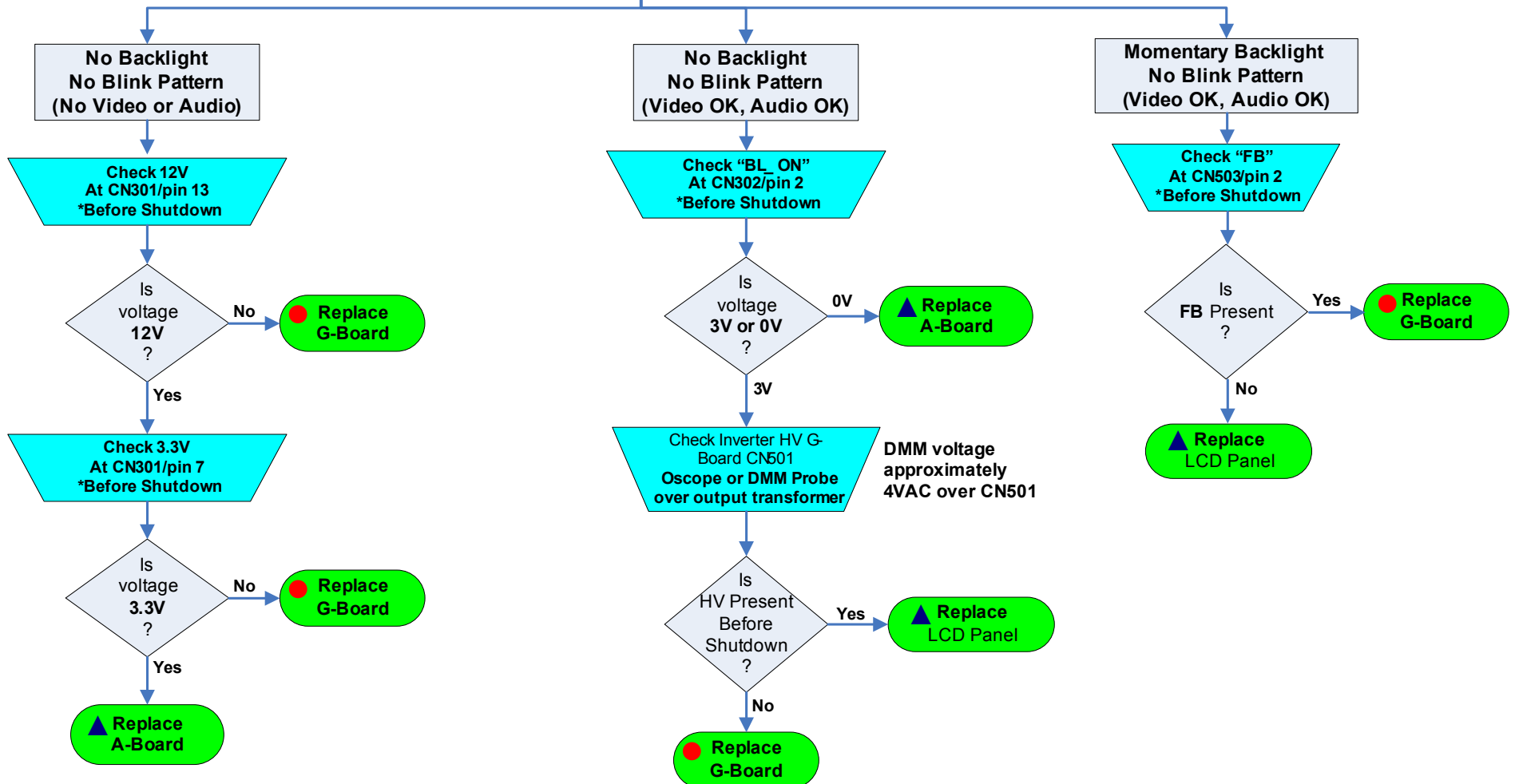
KDL- 40, 46, 52S4100 Backlight Troubleshooting Flowchart D

D

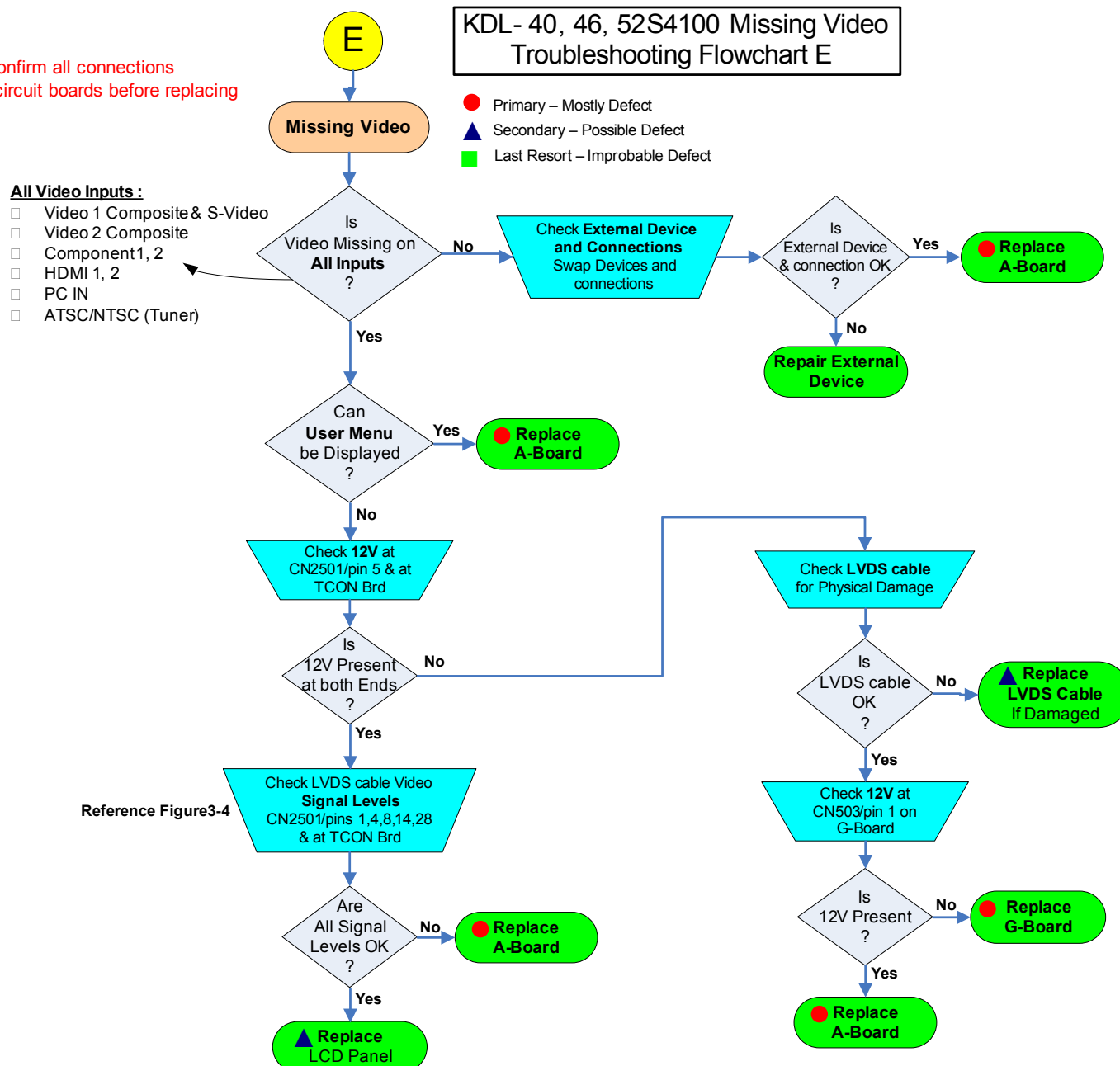
Backlight
Troubleshooting

- Primary – Mostly Defect
- ▲ Secondary – Possible Defect
- Last Resort – Improbable Defect

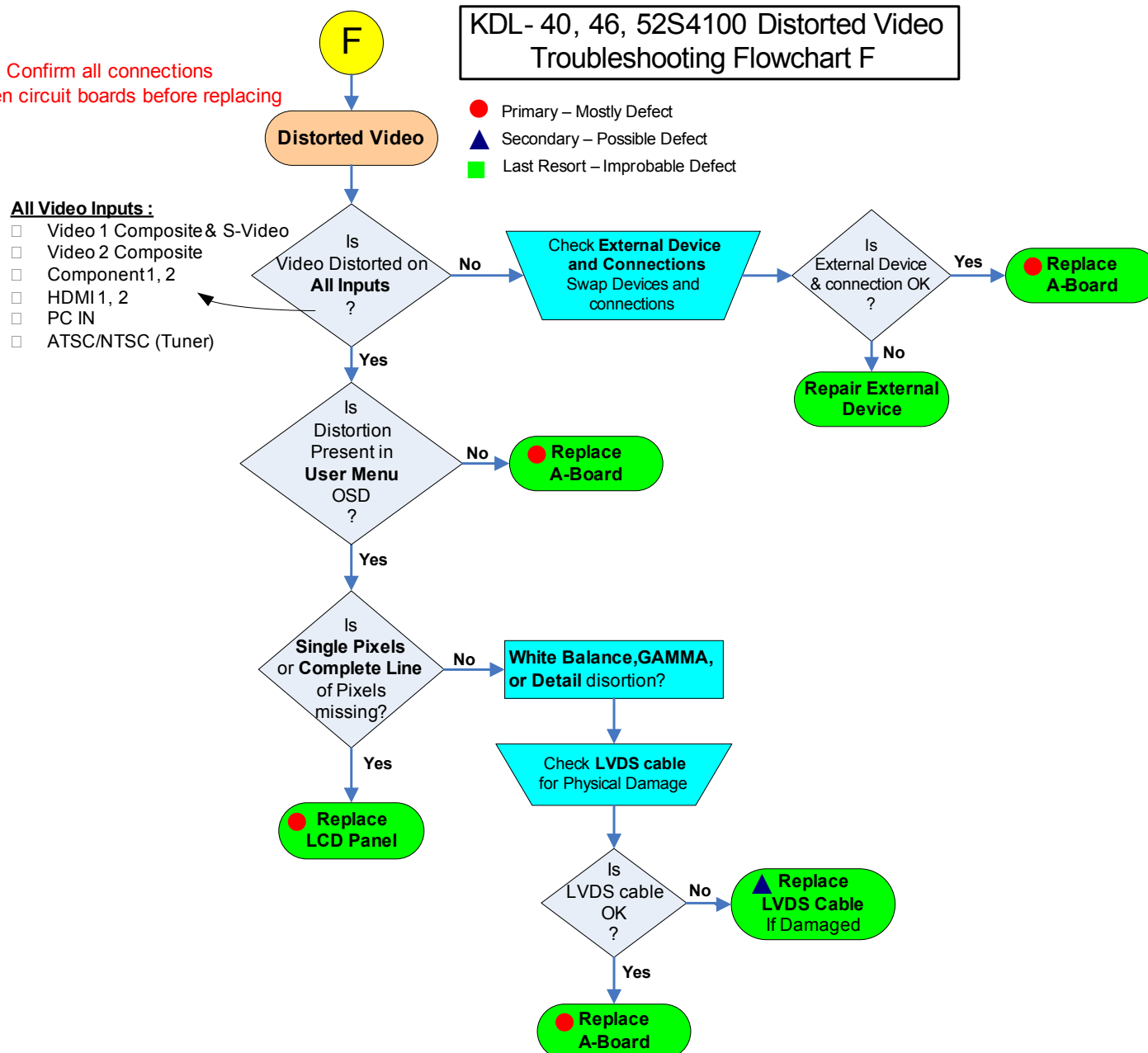
Reference Figure 3-1 & 3-2
for Test Point Locations



NOTE: Confirm all connections between circuit boards before replacing



NOTE: Confirm all connections between circuit boards before replacing

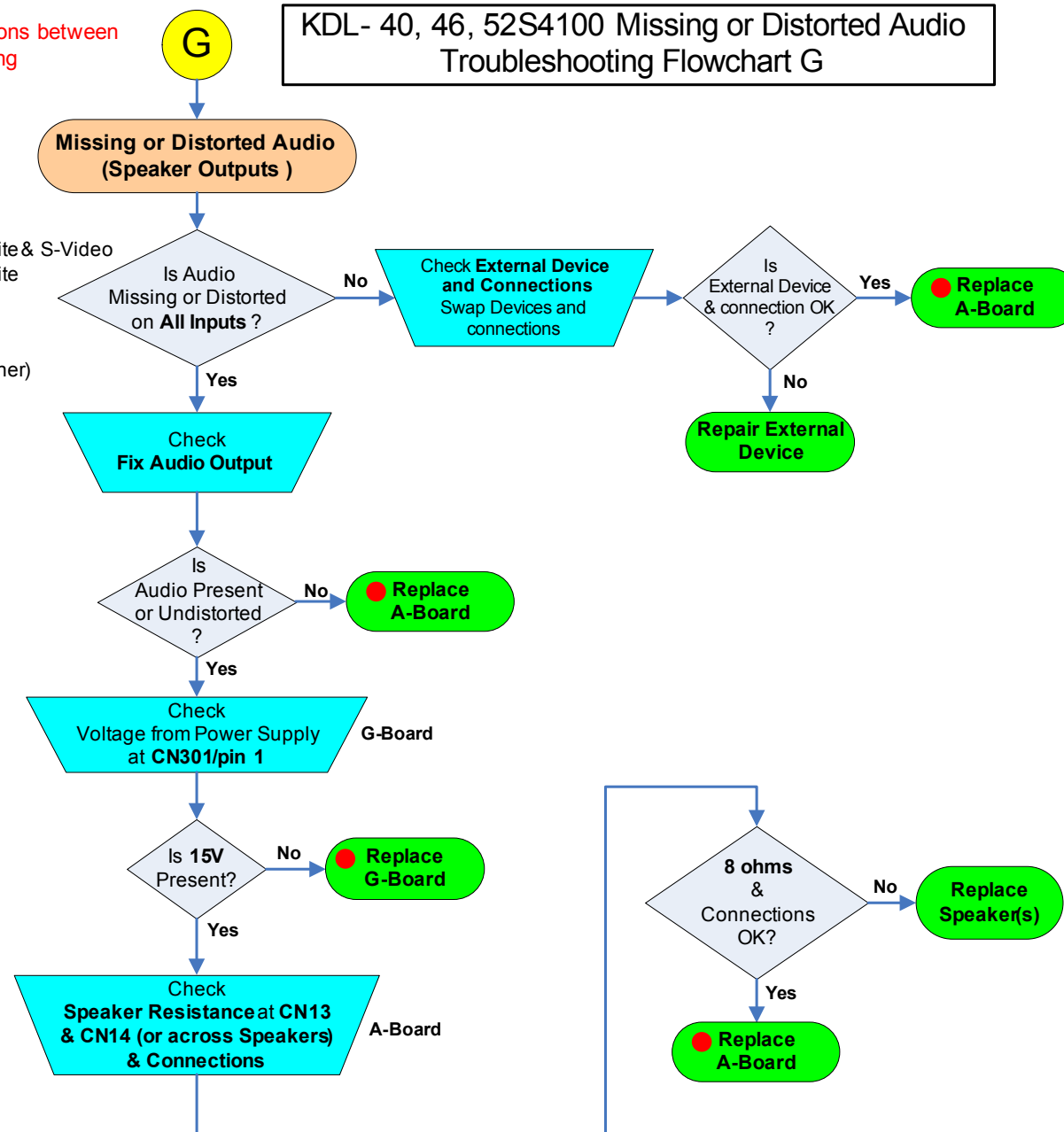


NOTE: Confirm all connections between circuit boards before replacing

Reference Figures 3-1 & 3-2 for Test Point Locations

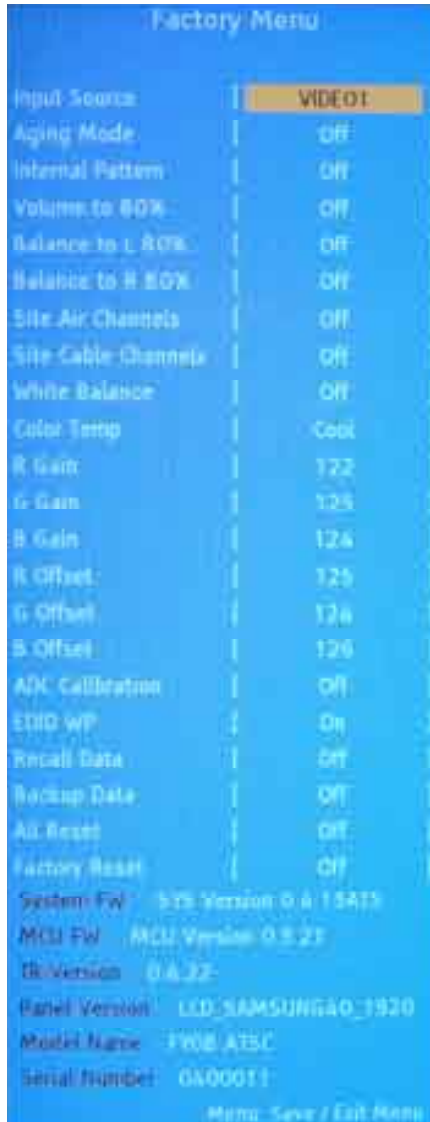
All Audio Inputs :

- ☐ Video 1 Composite & S-Video
- ☐ Video 2 Composite
- ☐ Component 1, 2
- ☐ HDMI 1, 2
- ☐ PC IN
- ☐ ATSC/NTSC (Tuner)

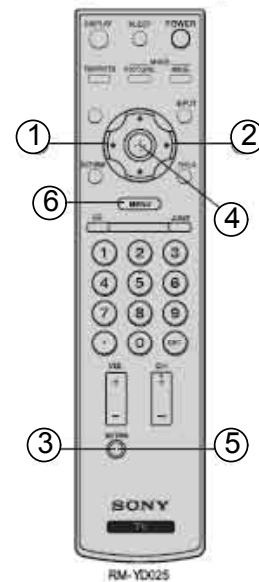
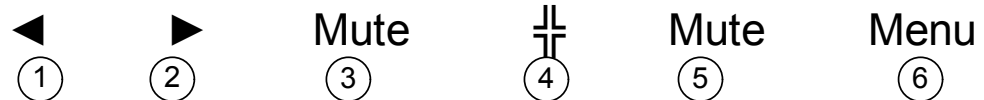


Section 6 - Service Mode & Factory Reset

Service Mode FX Chassis



Entering Service Mode: With the **TV ON** press the following buttons on the remote controller in sequence.



Service Mode Item Descriptions

Input Source:

This item is the same as selecting the input source from the remote controller or TV top panel buttons.

Aging Mode:

This item can be activate to alleviate any LCD image retention issues. When turned ON the TV will continuously cycle through display red, green, blue, and white rasters.

Internal Test Pattern:

The internal patterns included are as follows. To select the patterns press the “Right Arrow” and then the “Center Jog Button.” Continue to stroll through all internal patterns.

- 1) 100% White
- 2) 70 % White
- 3) 25% White
- 4) 0% White (Black)
- 5) Red
- 6) Green
- 7) Blue
- 8) 256G

Volume 80%:

Set audio volume level to 80%.

Balance to L 80%:

Sets the speaker audio balance to 80% left channel.

Balance to R 80%:

Sets the speaker audio balance to 80% right channel.

Site Air Channels & Site Cable Channels: Factory Use Only

White Balance:

Set this item to ON when adjusting the Color Temperature (CT) item in order to save the adjustments set in the CT item. Set this item to OFF after CT adjustment.

Color Temp:

This item selects the Color Temperature (CT) to be adjusted (Cool,

Natural, and Warm). The particular CT mode can be adjusted for the following RGB color levels.

- 1) R Gain
- 2) G Gain
- 3) B Gain
- 4) R Offset
- 5) G Offset
- 6) B Offset

ADC Calibration: Factory Use Only

EDID WP: Factory Use Only

Recall Data:

This item will recall the last set of Backup data. If an adjustment error occurs and the data was not backed up this item can be used to set the data back to its previous state.

Backup Data:

This item is used along with the White Balance item (ON) to permanently set CT adjustment data.

All Rest: Factory Use Only

Factory Reset:

This item resets all data including User data settings to factory set data. The factory reset can also be performed using the remote controller and TV power button (Refernece Factory Reset procedure).

TV Information:

The following TV information is displayed at the bottom of the Service Mode screen.

- 1) System FW (software version)
- 2) MCU FW (software version)
- 3) TR Version
- 4) Panel Version
- 5) Model Name
- 6) Serial Number

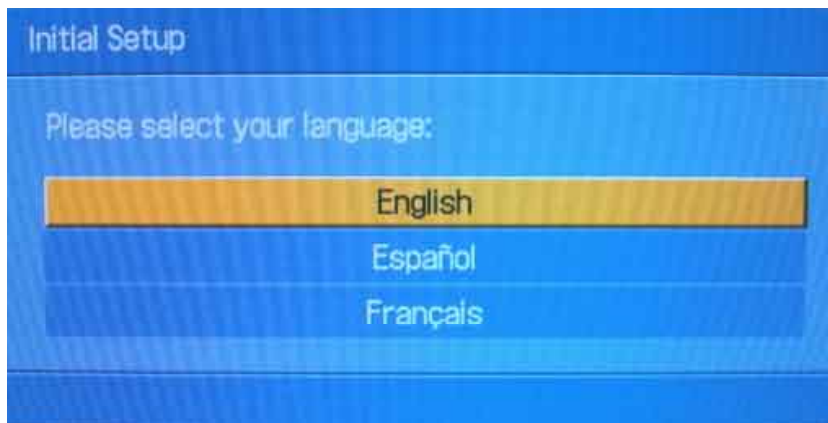
This information can also be found in the Product Information item in the User Menu.

Factory Reset FX Chassis

- 1) Turn the TV On.
 - 2) Press and Hold the "Up Arrow" on the remote controller .
 - 3) Press and Hold the "Power" button on the TV top key Panel .
- Note: The following "Reset" Dialog box will appear in the lower left corner.



- 4) Release the "Up Arrow" Button
- 5) Release "Power" button
- 6) TV will turn on automatically with the "Initial Setup" dialog box displayed



- 7) The TV is now reset to Factory settings

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